MANAGEMENT DECISION-MAKING IN NURSING

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ABSTRACT

This study developed a new, valid and reliable evaluation instrument to measure the level, type and pattern of management decisions of fifteen nursing students. The management decision score achieved using this instrument was correlated with two psychological determinants of management decision making: creativity and problem-solving ability. The instrument was a written patient management problem in case format, answered by a free form written response. The student responses were classified for type of management decision according to the sub-categories of technical, inter-personal, environmental and unique. Using statistical analysis a significant difference was found in the type of management decisions most frequently selected by the study sample. The students predominantly selected technical type decisions. This preference for one type of management decision may be due to a number of psychological and environmental factors. These factors may program and mold the type of management decisions student nurses make early in their career.

Low but positive correlations were found between the total management score and the two psychological tests. This finding supports the authors cited in the literature who state that although creativity augments the type of management decision making, it is not present or encouraged widely in the nursing profession. These factors are worth considering when the profession becomes concerned over ritualization and lack of individuality in patient care.

The tool is easy to administer, lends itself to a variety of professional settings and shows promise with further refinement for computer application.

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CHAPTER ONE

INTRODUCTION

1.1. Overview

Sensitivity and caring in giving thoughtful comfort are the essence of nursing. Students drawn to the profession perceive that through their natural attributes and acquired skills, comfort and improvement in patient health status will be achieved by the student's ability to make effective, efficient, humane management decisions. Management decisions involve planned actions by the nursing student to use technical procedures, interpersonal skills and alterations in the environment for resolving patient problems. The level of management decisions made by nursing students can be inferred from their demonstrated ability to use the nursing process. The nursing process is the term used for the problem-solving process in the nursing discipline. Neither the level, nor the type of management decisions of nursing students or practicing nurses has been objectively measured (Jenkins, 1985). Similarly, the investigation of the psychological determinants of quality management decisions needs research in this discipline. These two concerns form the basis of this study.

Management decision-making is a second order cognitive skill in the problem-solving process. The nurse uses this process to facilitate the patient's adaptation to the change inside or outside his or her body

(Barrows, 1975). Practitioners of medicine and nursing utilize the first order skills of knowledge of facts and techniques to use this intellectual skill (Barrows, 1975). In order for a nurse to establish her independent viewpoint on how to manage patient problems, she needs to problem-solve all the issues involved in the patient problem. Tamblyn stated that when the nurse is unable to assess the medical problem she can only guess about the relevance of situational conflicts to the manifestations of the total patient problem (Barrows, 1975). This makes it very difficult for the nurse to determine the method and priorities for subsequent nursing management. Examination of the nature of management decisions will: (1) assist the development of autonomous nursing practice; (2) identify if nurses are making the type of management decisions on which they want to focus their care; (3) increase awareness of the need to assess sound problem-solving skills and intellectual skills that must be used in designing appropriate management decisions (Jenkins, 1985); (4) ensure that patient care becomes less ritualistic and more individualized.

Despite the need to possess these higher order skills, they have been less valued in nursing than other professions. Nursing curricula, professional standards and job descriptions place emphasis on the attainment of first order skills. Only recently have professional bodies acknowledged the decision-making skills of the nurse. Laws & Fode (1981) stated that nursing has made the least progress in autonomy because, unlike medicine and business, the ideas of autonomy and cognitive skills are not internalized early in the nurse's career.

1.2. Goal of the Study

The goal of this study is to measure the level and type of management decisions of student nurses in a diploma nursing program and to see if a pattern of type of discussion exists. It seeks to shed light on which type of management decisions for patient care students are predominantly selecting early in their careers. The central concepts of this study and their inter-relationships are diagramed in Fig. 1.

The null hypothesis for this study is:
There will be no predominance of one type of management decision over other types in responses on the Nursing Patient Management Problem (N.P.M.P.). Stephenson's (1980) study on physicians' management decisions found a predominance of interpersonal type of decisions to written patient management problems. Task analysis, standards of practice descriptions and curriculum content tend to focus on technical management decisions in the nursing profession. As such, it seemed worthwhile to test this hypothesis by categorizing the problem-solving responses of student nurses early in their career.

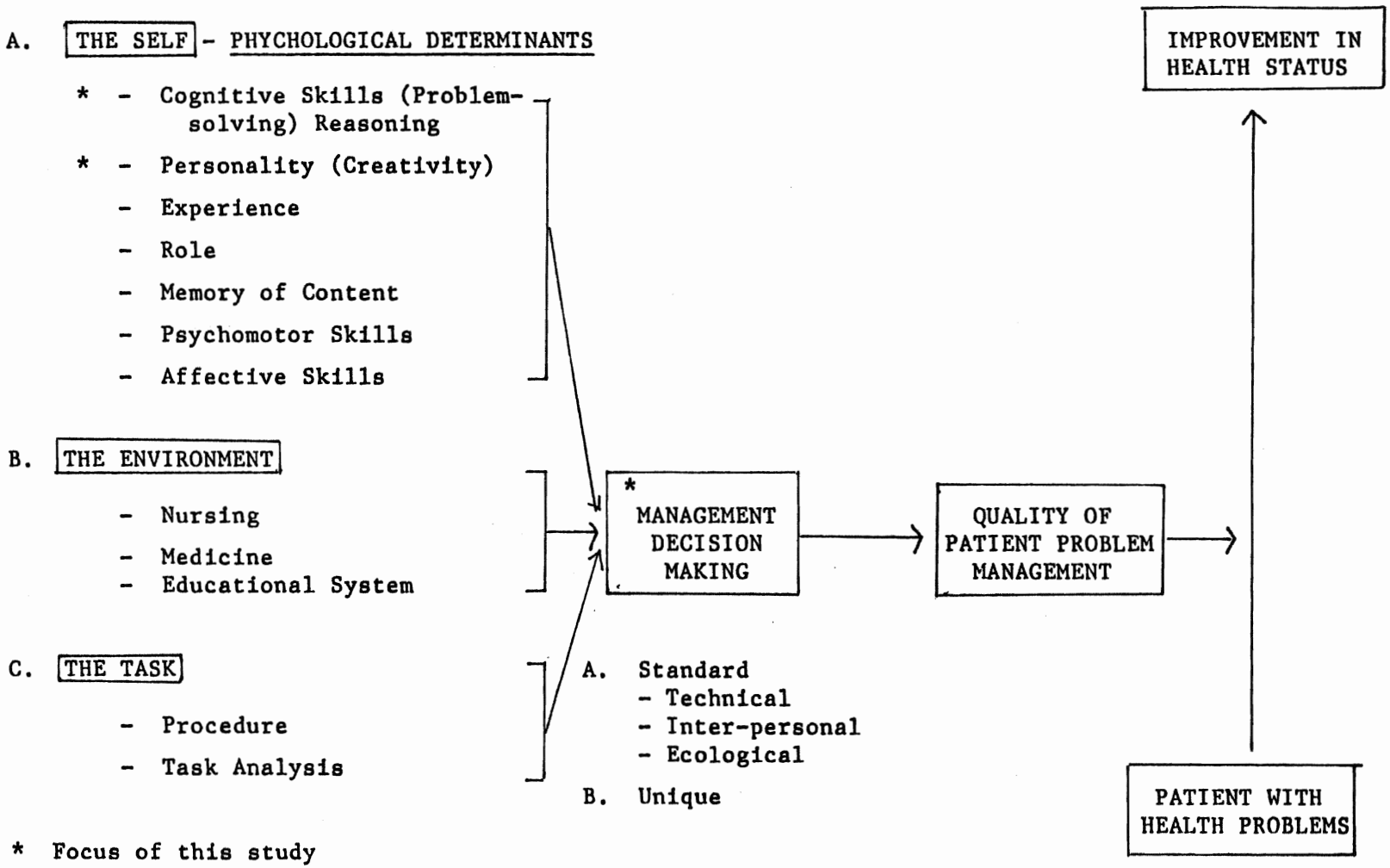
Nursing can benefit by recognizing the extensive work by other desciplines on management decisions and apply common concepts. In this way, more insight may be gained into the unique process of problem-solving, management decision-making and the psychological determinants as they operate in the nurse.

As inquiry into the dynamics of management decision-making in nursing is embryonic, specific evaluation tools are not accessible. This necessitated the design of an evaluation tool quality sensitive yet able to differentiate types of management decisions.

FIG. 1

FLOW CHART OF CENTRAL CONCEPTS OF THIS RESEARCH STUDY

FACTORS AFFECTING CLINICAL REASONING/PROBLEM-SOLVING



* Focus of this study

In the evaluation instrument designed, students selected management decisions to a written patient management problem responding in free form. The instrument is based on Stephenson's (1980) work. By using open ended answers, this study:

(1) designs a sensitive instrument with which to measure the level of nursing management decisions.

(2) uses the above instrument to examine the frequency of four types of management decisions:

    (a) technical
    (b) interpersonal
    (c) ecological
    (d) unique.

(3) measures the level of management decisions according to pre-set criteria.

(4) compares the responses of different students on this instrument.

This study also investigates the relationship of two psychological determinants of management decisions: (1) problem-solving skill ability and (2) personal creativity. A review of the literature suggests both elements directly influence the level and kind of management decisions.

Because management decisions are a component of the problem-solving process, the student's ability with this total process will influence the stage at which management decisions are made.

Creativity assists the nurse in generating a broad range of appropriate individualized decisions for care. Imagination, flexibility of thought and inventiveness are those aspects of creativity which allow the nurse

to individually tailor each patient's case. Specialized care is paramount in nursing due to the human nature of the task. The nurse is frequently confronted by situations which require unique decisions for standard patient care that have not been memorized. Paradoxically creative behaviour is not a component of most nursing curricula. The benefit of a combination of cognitive skill with creativity is stated well in the following quotations:

> The mere formulation of a problem is far more often essential than its solution, which may be merely a matter of mathematical or experimental skill. To raise new questions, new possibilities, to regard old problems from a new angle requires creative imagination and marks real advances in science. (Albert Einstein in Parnes, 1967, p14).
>
> Without knowledge, imagination cannot be productive. Without imaginative manipulation, abundant knowledge cannot help us live in a world of change. (Sidney Parnes, 1967, p.7)

It is understandable why these two personal attributes of the nurse have been overlooked.

Historically, nursing education was hospital based rather than part of an academic institution. As a result the developing nurse educator became primarily knowledgeable and skillful in technical patient care. Few have had formal preparation in the teaching skills, cognitive or creative development necessary for promoting a professional level of decision making. Although found acceptable, nursing programs would not tolerate such an amateur status in those individuals responsible for teaching technical procedures as they do in the facilitation of cognitive skills.

With the increasing sophistication and specialization of all health care disciplines, nursing is re-examining the role of the nurse and her relationship to the multi-disciplinary team. A focus on procedural skill mastery, or content memorization is no longer adequate. Today's nurse requires the basic skills of problem-solving, including management decision making.

Attention to this area as a focus for research is motivated by a desire to develop effective management decision makers in nursing, and to cause students and faculty to examine the cognitive processes and the creative talents of students. It is hoped this will stimulate student cognition resulting in personal enjoyment as a professional rather than a technician, advance the profession, and ensure effective management of health care. It is hoped that the synthesis of these concepts is novel and helpful to the education system and the nursing profession.

CHAPTER TWO

REVIEW OF THE LITERATURE

2.1. Introduction

Each patient presents the nurse with the challenge to assist in the effective resolution of problems interfering with the patient's personal quality of life. With every unique constellation of patient elements, quality care is provided by the admixture of the nurse's cognitive psychomotor and affective skills. Cognitively, the nurse uses her reasoning process to decide on the appropriate mix of each of her skills in dealing with each patient. This reasoning process is also termed problem-solving. It is within this sequential problem-solving process that the nurse selects management decisions for patient problem resolution. The degree of success in patient problem resolution is proportional to the quality of management decisions made by each member of the health team over a period of time; a reflection, among other things, of the nurse's problem-solving ability.

The generation of management decisions follows the search for and analysis of information. At that point, an informed decision can be made without avoidable risk to the patient (McWhinney, 1979).

Such decision making is a synthesizing individualizing process.

2.2. The Problem-Solving/Clinical Reasoning Process

Much work has been done on general problem-solving ability, and especially the initial steps of the process, which precede management decision making. This is understandable, for if the initial steps in the process are in disarray, inappropriate management decisions will be generated. Conversely, the initial analysis is worthless unless a decision is made to solve the problem. The decision symbolizes the culmination of energy invested in problem analysis. To see management decisions in their proper perspective, a comprehensive review of the problem solving process is included. Before the history of this process is presented, it is important to clarify and differentiate those terms which are sometimes used interchangeably with problem-solving.

Although their descriptions employ differing terminology, all professional disciplines (medicine, business, nursing, education, family management and auto mechanics) utilize the same cognitive process in reaching decisions. Although many terms have been used, problem solving is the most commonly used term.

Carnovali (1984) refers to this process as Diagnostic Reasoning. Barrows (1975) uses Clinical Reasoning because the term "problem-solving" may be misinterpreted. Unfortunately, the term "problem-solving" may take on the connotation that the task of the physician or the nurse is to solve problems. Many problems are insoluble; but the clinician does evaluate, analyze and seek to manage patients effectively. Problem-solving also suggests that the intellectual process of finding the solution is the objective or end point to this

skill, when the treatment, therapeutic aspects or problem management of the process is the appropriate end point (Barrows, 1980). To facilitate ease of communication, within this text the term "problem-solving" will be used with the understanding that the nurse's role is to manage patients effectively. Terms such as "clinical judgement" and "decision making" focus specifically on the decision making component of the problem- solving process. Decision making occurs at several points within the sequence of the problem-solving process. This study focuses on the stage of management decisions.

Historical Developments

Historically, research on problem-solving and on how the mind works has travelled along two paths, the biological and the behavioural. The aspect that separates the biological study of the brain from the behavioural study of the mind is the unique aspect of awareness (Koestler, 1973). Awareness is a cognitive psychological component of the mind.

As far back as Hippocrates, Aristotle and the writings in the Bible, man has been perplexed by the mechanism of the mind. Roger Sperry (1966) as cited by Springer (1981) increased knowledge of this field by doing split brain research. This research led to theories of brain hemispherical specialization. The left brain is found to specialize in analytical and hence problem-solving ability, whereas the right brain is the source of creative abilities. Biological research is continuing to unveil the physiological mechanism of body/mind interactions. The extensive observation and analysis of problem-solving behaviour have

yielded theories of intellectual processing. Most authors agree that the problem-solving process involves a strategic approach to the solution to a problem. Disciplines often determine the process variations. Professional areas such as medicine, nursing and business, where the view of the task is clear, have a well defined problem-solving or clinical reasoning process.

This cognitive process requires the thinker to be receptive and aware of all stimuli, use logic to evaluate alternatives, and have the courage to make judgements. It involves cognitive skills as well as a specific sequenced process. The student's ability to use this process will be affected by many factors (Nu Viet Vu, 1980):

(1) the amount of content knowledge (memory)
(2) the clinical context
(3) the level of training/experience
(4) the specificity of the clinical problem
(5) the level of knowledge of the process of problem-solving (p.439)

2.3. A Model for Problem-Solving

Management decisions occur within the problem solving process presented in this paper. This model illustrated in Fig. 2 is a synthesis of the models produced by Aristotle (Bambrough, 1973), Barrows (1980), Elstein et al. (1978), McWhinney (1979), Guilford (1977), Parnes (1967), Knoop (1984) and Popp, et al. (1979). In general, existing models have attempted to define:

> (a) the different processes that comprise clinical problem-solving
> (b) the skills that constitute each process
> (c) the variables that affect both
>
> (Nu Viet Vu, 1980 p.437)

In the model presented, the left hand column portrays the flow of cognitive processes occuring within the diagnostician confronted with a problem situation. The right hand column identifies the cognitive operations or learned thinking skills specific to each stage in the process.

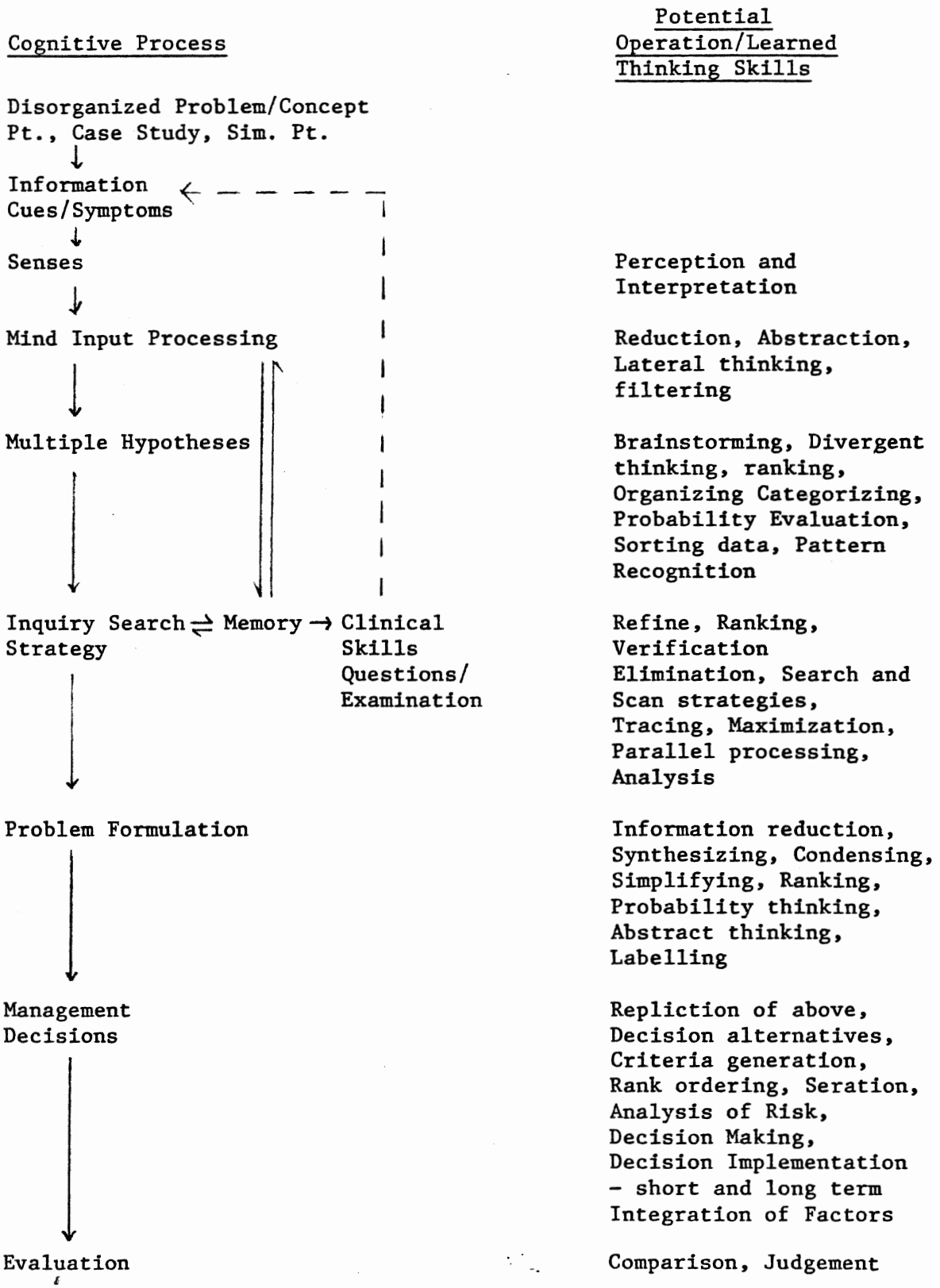
Problem-solving skills have been more thoroughly researched in medicine than in nursing due to the critical nature and time restrictions characterizing medical diagnosis. The medical professional feels responsible for producing high quality practitioners who will elicit data from patients efficiently and without inappropriate expense to the health care system or personal stress to the patient (Barrows, 1980).

At its minimum, problem-solving involves problem sensing, hypothesis generation and evaluation. In medicine, Bashook (1976) feels a physician first makes a series of decisions leading to an acceptable resolution to a problem. He starts with problem sensing, moves to

FIG. 2

CLINICAL REASONING

THE PROBLEM-SOLVING MODEL



problem defining and finally problem management. Visonhaler (1975) describes a meta theory. This theory comprises a decision maker, a case and information interaction. He maintains the decision is dependent upon the clinician's memory and decision making strategy.

The nurse also employs this cognitive process to infer and classify the status of a patient on the basis of whatever data are present and available. As a diagnostician, her challenge is to find a known starting point and move into and make order out of the uncertain ambiguous world of cues; to collect, sort out and organize the cues to gradually delimit the search spaces; to find the normals and gradually move to the terminal point of assigning diagnostic classifications or problem label; and deciding on appropriate decisions for an effective management plan (Carnovali, 1984).

Perception/Sensing

Within the area of problem sensing or perception, three main skills are involved: collecting, interpreting and integrating data. The accuracy of use of these skills and their operation affect the quality of decision for patient management. De Bono (1977) states that what a pupil actually sees depends on his ability and experience, but teachers should encourage the student to look in all directions. Barrows and Tamblyn (1980) agree and adds that the student's expectations, preconceptions and biases often unconsciously will influence the perception of information. Perception of data is an active process; it is a result of attention, prior conditioning and a conscious search for information. The student must develop an awareness of how his conscious

or unconscious attidues, interpretations and biases about the patient or his problem based on past experience or beliefs may alter the picture of the problem confronting him. The act of diagnosis, whatever the context, is the process of inferring the unobservable state of the client from uncertain observable data presented by the client (Barrows and Tamblyn, 1980). It is this probabilistic nature of the relationship between cues and the internal state of the client which makes the inference process so complex. The uncertainty is reduced by collecting data. The clinician's recognition of the probabilistic relationship between cues and diagnoses increases the thoroughness of data collection and improves diagnostic accuracy. Norman (1982) says one's perception is based on the premise that everything is identified as an instance of something else. Carnovali (1984) feels each discipline collects discipline-specific data. Unfortunately, a tradition of collecting too narrow a field of data using limited strategies and standard protocols generates blindness in nursing (Carnovali, 1984).

Hypotheses

The clinician reaches a problem statement at the end of problem distillation. Hypothesis refers to separate ideas, concepts, diagnosis, concepts and guesses that label explanations of the patient's distillations (summary of significant data) (Barrows, 1975).

Elstein et al. (1974) found that hypotheses are retrieved from memory, and the number of hypotheses at any one time is limited, averaging from four to five. Neufeld (as cited in Vu 1980) found the origin of hypotheses related to the individual's previous patient experience.

He also found effective problem-solving is characterized by the generation of specific hypotheses, a search strategy and the use of specific questions to elicit specific findings (Nu Viet Vu, 1980).

Search Strategy

The complex, probabilistic, uncertain task of moving from wide open beginnings and the responsibility of producing valid diagnoses within the time constraints generate high cognitive strain on the diagnostician (Elstein et al., 1978). The diagnostician attempts to reduce this strain by employing a systematic search strategy. The non-personal purpose for a search is two-fold: to test and validate hypotheses, and to bring to light new and unexpected areas. These purposes are fulfilled by the directed and the routine search (McWhinney, 1979).

Memory

To remember is to have managed three things successfully: the acquisition, the retention and the retrieval of information (Norman, 1982). Failure to remember means a failure at managing one of these three things. Humans must mentally organize material to remember it. This guides the retrieval process. This concept is one of the basic teaching principles - new material builds on old. Cognitive research and neurophysiology provide data on the thinking functions of the brain. The brain does not retain unrelated facts (Chall and Mirsky, 1977). For information to stay in long term memory, bits of information must be organized and related together, building on prior learning. The mind insists on finding meaning and patterns and then using them to help recover and reconstruct what it attempts to remember. Problem-based

learning organizes and facilitates the long term acquisition of knowledge. Secondary or long term memory constitutes an addressable storage system; a system in which the route that must be taken to find the relevant information is given by the information itself. The brain makes a decision when information enters primary memory if it will be stored in secondary memory. Those items learned under unique or unusual settings, or tagged in a way that distinguishes them from all others with which they might be confused, will be remembered longest.

Another factor causing ease of retrieval is the biochemistry of memory. Neurobiologists studying memory at the cellular level report chemical and physical changes when data is stored in secondary memory. A biochemical change and cell change occur when neuronal cells communicate. The target cell changes shape, and calcium is released when we learn something. The repeated input of the same information causes an enzyme (Calpain) to be released at the target cell. This enzyme acts to rearrange the inner cell meshwork and receptor sites causing the circuit to move more easily in the future (Lynch, 1984). Educators may welcome this data to support teaching strategies such as problem-based learning that repeat and organize new information, and which build on prior learning.

Management Decisions

The philosophy of decisions has always been related to the "truth" of what is known (or believed) about the fundamental laws of the universe. The individual reaches this critical action stage after thorough analysis of the problem situation, assessment, hypotheses generation and

definition of the problem. (Jenkins, 1985). Within the stage of Management Decisions these areas will be examined: (a) Decision Alternatives/Options; (b) Evaluation of Alternatives; (c) Decision Making, and (d) Decision Implementation.

(a) Decision Alternatives/Options

Most authors agree that we deal with decision alternatives in two ways: first, generate them, then evaluate them. (Knoop, 1984). Usually this is done automatically without conscious awareness. (Parnes, 1967). At this stage the mind generates ideas. The emphasis is on quantity and diversity. Simple techniques such as brainstorming or synectics are profitable mental gymnastics to call forth numerous alternatives.

Psychological and environmental forces determine the cognitive generation of decision alternatives. The type of personality will influence the number and kind of alternatives generated. Those who are insecure and conservative are more likely to develop a traditionally short list of already censored decisions. More secure, courageous, creative minds will find it stimulating to generate a wide diversity of alternatives. Freud (1954) comments on this in his book on the interpretation of dreams,

> In the case of the creative mind, it seems to me, the intellect has withdrawn its watchers from the gates, and the ideas rush in pell mell and only then does it review the multitude. (p.193)

(b) Evaluation of Alternatives

From the list of alternatives generated, a selection of the most promising takes place. The number of alternatives is reduced by the evaluation against individual criteria and external pressure. Personal criteria include such items as values, risks, benefit to emotional state and benefit to self concept. Miller and Starr (1967) say that the decision maker's values influence the "rightness" of which alternative is selected. Alternatives which are consistent with his/her value system, cognitive structure and life style are selected. (Jenkins, 1985). Man seeks to calculate the risks and pay-offs of each alternative based on the experience of himself and others (Miller and Starr, 1967). As well, motivation occurs by conscious and unconscious forces toward a decision which will reduce tension and return the problem-solver to a state of physical and emotional equilibrium. Existential man opts for an alternative with high probability of problem solution satisfaction necessary to carry him toward his potential needs and goals. The "goodness" of a decision is measured often by the extent to which its results satisfy the decision maker's objectives. (Miller and Starr, 1967). It may yield self satisfaction due to the personal involvement creating the change. The decision maker uses probability, and balancing assets and debits when evaluating alternatives.

Often there is external pressure to make decisions similar to those of others. In his book "Teaching to Think", Boraas (1924) identifies many forces which are still operative in contemporary society. He lists some of the personal advantages derived from being consistent with others:

1. It is the easiest and the path of least resistance.
2. It is the quickest way; it is not necessary to think on one's own.
3. It is the most efficient way for individuals of small or average talent because it enables them to act on the thoughts of the best minds in their group. They can save themselves from failure by adopting the plans of those more clever than they.
4. It is most efficient to the progress of the group.
5. It promotes group stability. (p.234)

When all the information is available, decisions can be made with certainty. This is called maximization. Usually decisions are made under conditions of uncertainty. To reduce the resulting cognitive strain, often simplistic cross classification charts are formed within the mind of the decision maker (Miller and Starr, 1967). Fig. 3 is an example of a chart for the evaluation of alternatives to improve the leadership in an organization. The decision maker has selected four alternatives: (1) the leader will be asked to leave; (2) the staff will be provided with extrinsic rewards; (3) a management consultant will be retained; (4) or the leader will self-initiate a new leadership style. Alternatives are evaluated against four criteria: personal energy, financial cost, risk level and probability of improving staff productivity.

(c) Decision Making

The decisions of choice will emerge at the closure of the alternatives evaluation. When the alternatives have been evaluated, a solution will emerge. Once each decision has been reached, it remains to be decided whether it is a programmable or non-programmable decision. Programmable decisions refer to the breaking down of the decision into a sequence of steps for implementation over time. The outcome of this examination will influence how the decision will be implemented.

FIG. 3

ALTERNATIVES TO IMPROVE LEADERSHIP

EVALUATING FACTORS	LEAVE	EXTRINSIC REWARDS	MANAGEMENT CONSULTANT	SELF INITIATED
1. Personal Energy Expenditure	H	M	M	H
2. Financial Cost				
- Personal	H	H		L
- School	H	H	H	L
3. Risk Level (potential loss)				
A. Of self esteem	H	M	H	L
B. Of positive regard by administration	H	M	H	L
C. Of decreased productivity of staff	H	M	H	L
4. Probability of Improving Staff Productivity in Short term	L	M	L	H

H = High

M = Moderate

L = Low

(d) Decision Implementation

The strategy used in implementing management decisions requires the consideration of three factors: (1) standard or programmable decisions; (2) time frames; and (3) the wisest choice of personnel to involve.

When the same type of problem regularly occurs in an environment, programmable decisions are usually designed. A consistent plan of action may be devised, sometimes called a "standard operating procedure" or as one of my colleagues so aptly put it, a "recipe". Although standard procedures are advantageous for efficient mechanical task management, they may not always suit human problems. Each patient's problems, despite universal components, will require individualized management resulting from the unique mix of factors present. Laws and Fode (1981) state that when nurses become slaves to standard procedures they neglect the patient as a special person and fail to utilize their own mental abilities.

Each decision's plan of action should have a time frame implementation structure, with those actions to be taken in the short term differentiated from those to be implemented later. The decision maker should at this point be alert to and anticipate new problems which may emerge from each decision implemented. This sensitivity may require an adjustment of implementation steps.

Decisions implemented skillfully will reflect the wisest choice of personnel to involve to ensure success. Decisions will be implemented most successfully by the persons who are sincerely interested, internally motivated, or who have worked through the problem-solving process for the specific problem situation. They have a personal investment in the successful management of the problem and are internally motivated to achieve the goals involved (Knoop, 1981). Failure to consider these factors may lead to disappointing decision implementation.

Evaluation

Evaluation of the decisions is a critical step in the problem solving process. Unfortunately, due to the amount of courage and energy required, it is sometimes ignored unless there is external pressure. The evaluator whose internal schema causes her to evaluate has to ask herself: Did the decision change the problem positively? Has the patient's problem been effectively managed? These difficult but basic questions must be asked by those who seek to manage professionally, and who wish to avoid self-delusion.

In conclusion, efficient problem-solving or clinical reasoning appears to depend on both the individual's acquired skills and mastery of the content of the problem to be solved.

2.4. Decision Making in Nursing

Decision-making is at the core of every competent nurse. However, due to many influencing factors, the nurse may be restricted in the development and implementation of patient management decision making

skills. Carnovali (1984) in her excellent book on Diagnostic Reasoning examines how all diagnosticians, despite their discipline, are influenced in the same manner. If we apply the problem-solving model of analysis to the problem of "Poor Decision Making", a cross classification chart may be generated as in Fig. 4. The three major factors influencing the quality and type of decision making skill are: (1) psychological determinants (the nurse herself), (2) the environment, and (3) the task (Carnovali, 1984). The various cells of the figure describe the factors accounting for the poor decision making by nurses, the behaviour, causes and ways to overcome the effects of these factors.

(1) Psychological Determinants

The psychological makings of the nurse consists of numerous components. Some of these are the various skills she possesses: cognitive, psychomotor and affective. As well, the self is a result of the personality, the memory, experience and personal values. Behavioural psychologists would tell us that an individual selects the role of nurse because it meets personal self-expectations and needs. The student's expectation is to change the health status of others. Technical procedures are not viewed as simply primary skills because they quickly fulfill the student's self-image as care providers. There is no broader view of the nurse as analyst and care designer at this stage in the nurses career because of the slower personal benefit. As a result, second order cognitive skills rate a lesser status. Teaching the concept of thinking has been obstructed by attitudes and ideas in most elementary and secondary schools. In fact, until recently, thinking skills was not taught in most colleges (Ruggins, 1984). As a result,

FIG. 4

RELATIONSHIP OF FACTORS INFLUENCING DECISION MAKING

PROBLEM: POOR NURSING DECISION MAKING

PROBLEM-SOLVING ANALYSIS

FACTORS	BEHAVIOURS	CAUSE	POSSIBLE SOLUTIONS (DECISIONS, MANAGEMENT PLAN	EVALUATION
(1) PHYCHOLOGICAL DETERMINANTS				
THE NURSE - Cognitive Skill - Personality Traits	1. Procedure Focus (Psychomotor and Affective	- Human Need - Patient Need - Self Concept		
	2. Poor NCP/ Charting	- Low Value (lack of insight education	- Security (experience) in P.S. Skill - Value of P.S.	
	3. Passivity Conformity	- Lack of practice in P.S. - Conditioning - Insecurity in skill	- professional perception change - Educational experiences to develop creativity	Evaluate originality
(2) ENVIRONMENT DETERMINANTS				
A. NURSING	Discourage Change Reward Routine	- Insecurity - Different Belief System	New Belief System	
B. MEDICINE	- poor communication across disciplines - M.D. independent plan of care	- View M.D. is the only one who P.S.	Multi-disciplinary Teams	
C. EDUCATION SYSTEM	- Curriculum Focus on Memory	Lack of knowledge by Nursing Educators of Cognitive Science	Problem-solving Curriculum	Evaluate Level of Skills
	- Taught not to Diagnose		Interdisciplinary Faculty Curriculum Consultants	
	- P.S. Taught Superficially			
(3) TASK	Technical Procedures	Patient Needs		

most students coming into nursing lack an understanding of the formal components of problem-solving practice in and value for problem-solving skills. Their prior education has provided them with little practice in problem-solving or learning techniques to enhance these skills. Therefore, students have little value for problem-solving skills. Naturally, this often leads to insecurity and an unfortunate avoidance of attention to the thinking processes.

One source of information about the nurse's application of cognitive skills and how she feels about them is the nurse's written documentation of her professional tasks. On a typical hospital ward there are two opportunities for the nurse to communicate her clinical reasoning skills: (1) the Nursing Care Plan and, (2) the patient's chart. Due to time constraints and environmental rewards there is minimal written communication of the nurse's thinking skills. Also, the environment's nursing communication format will influence what problem-solving skills will be documented. In settings in which Problem Oriented Charting is the policy, more time is focused on communicating reasoning skills.

As well as the naturally evolving attitudes to reasoning, students' academic background affects their use of cognitive skills. The discipline knowledge base tends to pre-set the uses one will notice, the vocabulary that will be used to describe cues and the concepts that will be used to organize, classify and explain data in the problem-solving process. (Carnovali, 1984). The number of concepts, their quality and sharpness and the organizational system used in storing this knowledge in long term memory for retrieval will determine on what basis the nurse

is able to make decisions for care (Carnovali, 1984). The memory a nurse has, what is stored and how it is stored, influence the nurse's decision-making performance.

The nurse's personality, whether it be assertive, passive, creative, optimistic or pessimistic, will influence the alternatives she generates for decision making. Unfortunately, passivity and conservatism are personality traits which seem to be fostered by conditioning in the nursing and medical environments.

(2) The Environment

A. The Nursing Profession

Where a nurse is employed often determines the level of decision making in which she will be involved. In settings where routines, procedures and concrete tasks are highly valued, aspiring to high cognitive levels of abstraction and synthesis is not encouraged or supported. Thoughtful retrospective role analysis clarifies the reasons that the nursing environment offers little recognition to clinical reasoning skills. Due to the nature of the environment, nurses are limited in formal problem-solving activity by time constraints. A case load, job description and assignments allot time for physical tasks and delegated medical acts but none for decision-making. The nurse is expected to do her cognitive activities while involved in patient procedures. To overcome this time constraint, the thinking nurse needs to plan a strategy by which she can proceed through her problem-solving process while giving basic nursing care (bathing, educating, feeding, etc.). Barrows (1975) states that multiple mental levels of thought go on in

the skillful, experienced clinician's head. Historically, nurses are not supposed to diagnose. It is as if miraculously, when the nurse's mind reaches this point in the natural course of thinking, she reaches a road block saying, "Thou shalt not proceed". The hazard with this attitude is that, although nurses are expected to make effective patient management decisions, the cognitive process remains shrouded in secrecy. Patient analysis must stay on a pre-determined path. One wonders if this stems from Victorian attitudes which consider it unladylike to think. The student's naive verbalizations of curiosity and developing reasoning skills are often greeted less than enthusiastically. Even an assertive, bright student can become less efficient cognitively and repress philosophical beliefs when conditioned by a powerful environment. An extreme comparison is the regression to primitive needs and apathy experienced by prisoners of concentration camps. Exercising the power to make decisions is freedom (Parnes, 1967). An environment that deprives the nurse or student of this natural ability robs her of the means to satisfy a basic human need (Parnes, 1967). One wonders how this contributes to the job dissatisfaction felt by many nurses. Laws and Fode (1981) feel such conditions serve to inhibit the development of nursing as a profession.

The well intended work of veterans of the profession to restrain nursing's development is based on a belief system not shared by contemporary society (Laws and Fode, 1981). With education and the perception of personal gain, a modification of attitude may allow the nurse to be joyfully engaged to her fullest potential. Unless the administration perceives that nurses have a legitimate right to function

overtly as diagnosticians, their management decision-making skill will be arrested. In a 1981 study by Laws & Fode on the autonomy and the use of the nursing process those nurses with higher levels of comprehension of the process recognized that the administration in their profession hindered the fullest exercise of professional management decisions.

B. Medical Environment

The relationship between the nursing and the medical professional has, since Florence Nightingale, determined the parameters of decision making for the nurse. The nurse's full potential is often misrepresented and misperceived by other health care disciplines. Eagerness to assist and implement medical management may be interpreted as a desire to do only these tasks. The secondary position of women in today's society professionally inhibits the automony of the nurse. Of course, many nurses maintain others' perception of themselves as technicians by feeling intimidated by physicians. Members of both professions curtail the nurse's path along the hallowed ground of data collection, problem analysis and decision making. In the hospital, the physician closely monitors patient care and decides, often independently, the plan of care. The nurse is an information source, but the physician takes over the cognitive manipulation of this data. In settings where the physician has less contact time with the patient, roles are designed to allow the nurse to function in an expanded role. Expanded roles provide the opportunity for more frequent, broader, and newer levels of decision-making. A minority of nursing employment settings encourages the nurse to function in this role. With the increased communication that a multi-disciplinary team brings to the health care setting, growth of

decision making for nurses occurs. Although all nurses are involved in decision making, the kind, frequency and level are influenced by the structure of the health care setting.

C. Educational Setting

In nursing education institutions, the development of student decision making ability is often paid only lip service. Memorization of facts is the curriculum focus and measurement of knowledge retention is the criterion. Although the problem-solving process is woven into the fabric of many nursing curriculums it is often taught as a rote procedure rather than an analytic application of reasoning skills. Unfortunately, procedures learned without the understanding of the rationale determining the sequential process are ill-conceived. On the knowledge hierarchy, memorization and regurgitation is simple compared to management and the processing of knowledge for problem-solving. All life experiences show that data that are memorized alone stay only in the brain's short term memory (Chall and Mirsky, 1977). To quote from Barrows (1975):

> It is not enough to mechanically gather historical and physical data (signs and symptoms) in comprehensive detail. The encounter with the patient must be, from beginning to end, a problem-based inquiry utilizing reasoning skills characteristic of any scientific investigation. (p.4)

Blindly gathering data in a nursing assessment prevents the nurse from effective decision-making. Assessments need to be directly related to a specific problem. This is where a search strategy is helpful. Unfortunately many nursing diploma curriculums have not awakened to the role change from technician to professional. A short term knowledge

product is not the goal of competency-based education or valued in the employment setting. This myopic curriculum design is not created intentionally. Nurse educators, like most teachers, strive to give their students what they perceive to be the best preparation possible. When the educational faculty perceive problem-solving as increasingly important, a shift from a memory to thinking focus will occur. Nursing programs are not alone, for although this information has long been available, it is only within the last decade that aggressive interest has been observed. This development in the nursing profession would be an example of what Alvin Toffler described as a general shift in our civilization in his book The Third Wave. It is the nursing educator's professional responsibility to develop learning strategies to maximize each nursing student's ability to use her thinking skills effectively.

(3) The Task

Management decisions are context specific. Therefore, the type of management decisions will likely vary with the unique task at hand.

Psychomotor skills are more highly prioritized and rewarded than decision making skills (Laws and Fode, 1981). A nurse establishes her credibility with a patient when she meets his role expectations by doing something physical for him. However, consumers of health care do not seek the service of professionals just for the actions they take, but for the professional judgement on which their actions are based (Carnovali, 1984).

2.5. Measuring Problem-Solving and Decision Making

The behavioural norms of the nursing environment, as previously discussed, determine to what extent nursing management decision making ability is measured. The literature yields little on this area, likely due to factors already addressed. Problem-solving is more frequently dealt with and is measured by the ability to carry out the nursing process. The ability to carry out the nursing process is judged from the nurse's ability to implement standard operating procedures within time frames. Some quality assurance programs feel they can measure overall competency by the planning nurses do on written nursing care plans which should reflect their reasoning. This may be a delusion. Task avoidance and the reinforcement of repeating standard care plans may be factors which make quality assurance care plan reviews an invalid measure of clinical reasoning for problem-solving of the ward nurse (Campbell, 1984).

In nursing educational settings, management decision-making ability again is not directly recognized or measured. The ability to problem-solve is often measured solely by faculty evaluation of written care plans. The care plan may not be a sensitive indicator of individual decision making ability. Influential factors such as group discussions, copying from textbooks or the faculty member's level of comprehension of problem-solving served to contaminate this as an accurate measure of an individual's reasoning or decision making ability (Barrows, 1980). Non-specific cognitive ability is most frequently measured in nursing curriculum by employing multiple choice tests.

Whereas nursing research in this area is sparse, medicine and business, due to their increased concern for student cognitive abilities, provide insights into the measurement of this skill. Medical research has shown the most accurate measure of the clinician's actual every day performance is tapped by utlizing more than one evaluation tool, employing an assessment tool which approximates reality, and using tools which are compatible with the memory level of the group (Nu Viet Vu, 1980). Due to the intangible nature of this type of research, it has often been difficult for researchers to validate evaluation tools of clinical problem-solving (Nu Viet Vu, 1980). The most encouraging information to date about this skill comes from multiple choice tests and patient management problems using simulated patients or computer simulations.

Multiple Choice Tests

Some researchers have sought to measure problem-solving using the old reliable, easy to administer, multiple choice test. Multiple choice tests are attractive to raters because they provide the artificial security of an objective quantitative measure. However, due to the cueing involved in the option selection, these tests do not provide an adequate measure of reasoning skills; rather they provide a measure of memory and good guesses (Barrows, 1983). Education needs to be aware of the strengths of this type of test. However, in real life, when a student enters a patient encounter, several options are not visually presented for selection. Dr. Howard S. Barrows, a master of clinical reasoning research in medical education, describes a humourous scenario. He is waiting for the day the medical clinical clerk, upon greeting a patient in the emergency room, will see

several problem hypotheses magically flash above the patient's head. In real problem situations, the practitioner cannot depend on an externally derived selection list; he has to call forth his reasoning skills in order to directly approach the problem.

Case Study Analysis

Case study analysis originating from the Harvard Law School provides a closer approximation to reality. The educator utilizing this technique needs to be aware that it only measures the student ability to analyze well-defined, organized problem situations, where all the data is presented on a platter. It does not measure data gathering skills, perceptiveness or the ability to attend to cues in the environment. In real life, problems are "ill defined". Problem situations in reality are not concisely presented in an organized format ready for cognitive digestion. They are disorganized, and part of the clinician's cognitive strain and skills is derived from the need to pull the vital information together (Carnovali, 1983).

Patient Management Problems

Problem-solving ability was initially measured by the Royal Air Force crews in World War One using training tests with covered answers called the Tab Test (Marshall, 1983). In medicine Rismoldi in 1941 (as cited in Marshall, 1983) designed a similar test to measure diagnostic skills. This card pack had questions on one side with answers on the reverse. The Patient Management Problem was born in 1967 with Christine McGuire at the University of Illinois. This test consisted of a series of options concerning history, exam, investigation and treatment. In 1962, Dr. H. S. Barrows developed a revolutionary new technique to teach neurology to medical students called a "simulated patient". A simulated patient is a real person who is programmed to portray a real patient's

medical problem(s) (Barrows, 1971). This learning resource simultaneously gave medical education a new tool to evaluate all the complex skills of clinical performance (cognitive, motor and affective domains). Prior evaluation methods provided an inaccurate evaluation of real-life problem-solving skills and clinical performance. There is quite a difference between the way a student verbalizes or writes about the management of a patient problem and what she actually does.

Burri, McCaughan and Barrows (1975) applied the simulated technique in a study which evaluated the problem-solving skills of practicing community physicians. In this study the simulated patient, posing as a new patient with medical problems, directly observed the physician's every day inter-personal, data gathering and management decision-making skills. This innovative technique is perhaps the closest approximation that can be hoped for in unobtrusively measuring real-life management decision-making skills (Burri, 1975).

As a more feasible alternative to measure problem-solving skills, Barrows and Tamblyn (1977) developed a Portable Patient Problem Pack (P4 deck). Using a problem-based learning format, this card deck allows the student a selection of actions at each stage of the problem-solving process. The reverse side of the selected card tells the student the result of her actions on the patient problem. When completed, the student tallies and compares her score of patient management decisions with those of expert clinicians.

Gale (1980) as cited in Marshall (1983) suggests that problem-solving is not case specific but specialty specific, in a study that compared performance of endocrinologists and neurologists on the same problem.

Again, memory must have the relevant content for the problem context. He found, that a sequence of data collection is almost always needed to illuminate the case problem and provide a basis for its resolution. Therefore, it may be beneficial to teach students sequential data collection techniques as an initial aspect of developing problem-solving skills.

Bashook (1976) says there is variability in performance on one case or problem analysis from another because there are different domains of problem-solving. A domain is defined by three components: (1) stage of the problem-solving process (sensing, defining, resolving); (2) clinical discipline; (3) context of care (ER, acute, chronic or health maintenance). Therefore, if a patient management problem (PMP) or case study focuses on a single domain its results cannot be generalized to problems in another domain (Marshall, 1983). However, two factors are consistent across all problems: information gathering (which may be a general ability) and decision-making which may be content specific. In a report by Jaul, Noe, and Nerenberg (1979) they suggest that if PMP's measure the two skills of data gathering and skill in management, each skill needs a separate score. They concluded that senior students (with more clinical experience) were better able to apply data gathering and management decisions due to their longevity in the program.

Stephenson's (1980) study of management decisions and creativity in family physician residents successfully utilized a patient management problem to evaluate decision-making and creativity. Due to the suitability of this design to the present area of investigation and the ease of implementation, it was selected for use in this study of a nursing education environment.

2.6. The Influence of Personal Creativity on Management Decision Making

The literature reveals extensive investigations of the relationship between creativity and problem-solving. Creativity has been felt by many authors to augment the problem-solving process (Parnes, 1967; Osborne, 1955; Guilford, 1967), so that the term "creative problem-solving" developed. Bloom (1956) used empirical studies to report that personality factors are at least as important as aptitude in determining problem-solving performance.

As the influence of creativity on decision-making has not been researched in the nursing literature, a description follows of the elements and effects of creativity on decision making from other disciplines.

Parnes (1967) states that when creativity and problem-solving are incorporated into the generation of decisions, the student will first speculate what "might be" from a variety of viewpoints; then she senses and anticipates all conceivable consequences or repercussions of the variety of actions she contemplated, finally choosing and developing the best alternatives. The presence of a creative personality in nursing allows the student to entertain a wider selection of alternatives, increasing the chances that appropriate individualized quality patient care decisions will be selected.

Guilford's (1967) research shows a correlation between the uniqueness of the solution to a problem and a person's level of creativity.
Barron (1958) found that creative persons had the personality trait of

originality of thought and the courage to judge situations independently. Carl Rogers (1961) has stated that the "creative process is the emergence in action of a novel relation or product growing out of the uniqueness of the individual on one hand and the materials, events, persona, and circumstances of his life on the other". (p.15).

The literature, then, reveals persistent and recurrent indications that personality factors are important in creative achievement and problem-solving. This personality factor is not an all or none phenomenon. It is present to some degree in everyone, but its existence may have been repressed due to internal or external pressures. The level of creativity may be raised, given encouragement and support.

Creativity is an elusive term. The literature divides it into a product, process, personality and environment, and there are discrepancies among the definitions. Parnes (1967) feels that creativity is a function of knowledge, imagination and evaluation.

2.7. What is a Creative Personality?

Those individuals with well developed personal creativity appear to behave differently from the masses. Simpson in 1922 defined creative ability as the initiative which one manifests by his power to break away from the usual sequence of thought into an altogether different pattern of thought (Torrance, 1962). It is the ability to bring something new and unique into existence. It is the ability to generate ideas fluently; it is having a fertile imagination and the courage to implement the ideas generated. It is associated with impulsiveness,

self-confidence, and greater appreciation for originality. These individuals tend to be more interested in aesthetic expression, in meditation or reflective thinking, and appear to be more tolerant of ambiguity, and to feel less need for discipline and orderliness. Many writers (Barron, 1957; Hargraves, 1927; Asborn, 1948; Simpson, 1922; Thurstone, 1952/53 as cited in Rothenburg and Houseman, 1976) have cited evidence concerning the relative independence of measures of intelligence and measures of creativity or imagination. Stein's and Hicage's (1960) as cited in Rothenburg and Houseman (1976) study to differentiate highly creative persons from less creative ones employed the personality measures from traditional personality tests such as the Minnesota Multiphasic Personality Inventory, Thematic Apperception Test, Rorschak and others to generate a list of eighty-four characteristics of the creative personality. MacKinnon (1960) as cited in Rothenburg and Houseman (1976) at the University of California Institute for Personality Assessment and Research using the MMPI and Strong Vocational Interest Blank found similar results. These overlap almost perfectly with Maslow's (1954) list of characteristics of the self-actualized personality, Roger's "Fully Functioning Person", Jung's "Individual Person" or Fromm's "Autonomous Person" (Rothenburg and Houseman, 1976). Individuals who rate high in originality rate high on vocational scales as architects, psychologists, authors, journalists, artists, and specialization levels. MacKinnon (1960) interpreted these findings as indicating that creative individuals are less interested in small details or in the practical and concrete aspects of life, and are more concerned with meanings, implications and symbolic equivalents of things and ideas (Rothenburg and Houseman, 1976).

Personality traits of fluency, flexibility, originality, elaboration, sensitivity and a strong evaluative ability tend to be the central traits of the creative personality (Parnes, 1967; Guilford, 1967). Fluency refers to the individual's ability to generate a relatively large number of ideas in an area in which he is acting creatively. Flexibility is the ability to generate ideas in many categories outside of the usual. Originality is the ability to generate statistically uncommon responses. Sensitivity refers to the ability to sense problems. A creative person has a low threshold for discomfort, and he sees problems where others are happy to continue undisturbed. He does not shelve problems as insoluble, pass them to others, or pretend he has solved the problem by eliminating the symptoms. Sensitivity implies the all important evaluation ability possessed by the person able to behave creatively rather than only with originality. Sensitivity enables the individual to become aware of effects or repercussions of his ideas before he puts them into use.

Amabile's (1983) reports support the contention that most creative individuals resist environmental control, citing such people as Einstein, Woody Allen and D. H. Lawrence. In Charles Dickens' letter to a friend he wrote about the social isolation needed for creativity. "Whoever is devoted to an art, must be content to deliver himself wholly up to it, and to find his recompense in it" (Amabile, 1983). Most creative personalities do things for their intrinsic rewards and are not fooled by the lure of external rewards such as money and fame. They are their own worst critics.

2.8. How to Measure Creativity

The investigator attempting to conduct creativity research is wise to heed warnings that the investigator of this area will have difficulty in satisfying himself or others that the specific problem he selected for study and the methods he has employed are indeed pertinent to that mysterious, awesome and seemingly ambiguous area covered by the word creativity. This non-mathematical problem is fraught with intangibles and variables making it difficult to precisely direct those elements which are tangible and constant (Osborne, 1953).

In studies of creativity it has been found that the creative person is characterized by strong polarities: ambivalences between competing dispositions, such as order versus disorder, ego enhancement versus self doubt, construction versus destruction, and rationality versus irrationality (Gough, 1976). During any span of time there is always the possibility that the negative pole will gain temporary ascendance, leading to self defeating behaviours. It is wise to be aware of this when attempting to measure creativity at one specific point in time.

Amabile (1983) identifies three types of tests to measure creativity: (1) Personality Inventories like the California Psychological Inventory or What Kind of Person are You by Torrance and Khatena, 1970; (2) Biographical Inventories; (3) Behavioural tests like the Torrance Test of Creative Thinking (1962) and the Barron Welsh Art Scale (1968). There is evidence that creativity tests assess a relatively stable attribute and ability.

The ability to measure these may be affected by the environment in which the test is administered. Pressure exerted by time constraints, or by being in a non-context-free environment (e.g. an academic institution) may affect the results (Lien, 1967). In addition, the proposed objective scoring procedures in many creativity tests are in fact largely subjective (Amabile, 1983). Therefore, there is difficulty inherent in using any creativity test for emperical research. The measures of creative personality have sometimes in the past been derived from a subjective evaluation of the creative "product". The issue is by what criteria we differentiate which products are creative or original. Jackson and Messich (1965) as found in Amabile (1983) suggest that judgements of outstanding creativity are composed of four aesthetic responses to the consumer occurring together: surprise, satisfaction, stimulation and savouring.

(1) Surprise in the aesthetic response to the unusualness in a product judged against norms.
(2) Satisfaction in the response to appropriateness in a product judged within the context of the work.
(3) Stimulation in the response to transformation in the product, evidence that the product breaks away from constraints.
(4) Savouring in the response to condensation in a product.

2.9. Factors Influencing Creativity Development

One can probably use the same format in analyzing the factors that affect creativity as affecting decision making ability. (See Fig. 4). The major broad categories of influence are the psychological determinants of the self, the environment, and the task at hand. Again the nature versus nurture debate arises, as many feel one's creativity level is innate or God's gift. Certainly what one does with one's potential is primarily under self control. Those who feel an inner need

for a creative expression will usually find it in one form or other at one time or another to satisfy the internal state. To do otherwise builds inner anxiety and frustration. Other personality variables influencing the manner, strength and time of demonstrated creative performance are the individual's self-confidence, initiative and need for social acceptance by the peer group (Amabile, 1983). He will at a conscious or unconscious level decide whether being creative has a high or low value depending upon the mind's ability to perceive the risks and pay-offs involved.

Rothenburg and Houseman (1976) says historically, significant creativity, whether an idea, a work of art, or a scientific discovery, is most likely to be seen initially as erroneous, bad or foolish. It has been said no contemporary mortal can satisfactorily evaluate a creative product at the time it is formed. It is from this universal truth that aphorisms such as "a prophet is never lauded in his own land" are based.

The behavioural norms for the society often influence the development or repression of creativity. Since creativity involves independence of mind, non-conformity to group pressure, or breaking out of the mold, it is inevitable that the creative individual experiences social problems (Amabile, 1983). Therefore creativity is repressed or the individual has to cope with the tensions that arise from being a minority of one. Society has numerous coercive influences on divergence. Teachers often feel threatened when creative students express their creativity, misinterpreting such behaviour as aggressive or hostile. Curiosity may

not be welcomed. Torrance's (1962) work shows there is a social and professional emphasis on maintaining sex norms, and efforts to establish these norms cause problems for creative students.

Social or environmental factors often heavily influence the developing creative personality. In 1975, D. K. Simonton initiated the idea of a new field of investigation called the social psychology of creativity (Amabile, 1983). This area investigates the motivational variables which influence the creative process. Information about the environment's effects have often been obtained retrospectively by analyzing autobiographies of great creative personalities. Amabile (1983) states that three environmental forces shape personal creativity. Many outstanding individuals state that the expectation of external evaluation is a major environmental factor constraining creativity and cramping freedom. The race for success, the time to beat someone else out and competition influence the quality of creativity. Lastly, the pressure of success may paralyze creativity. Many of us have had the experience of creating something remarkable be it a painting or other art form when we are just dabbling for self satisfaction, but are unable to reproduce the same quality when it is known the quality will be externally evaluated and influence personal success. Creativity, by its nature, requires both sensitivity and independence. In our culture, independence is still considered by the majority a masculine value (Barron, 1957, Rae, 1959 as cited in Amabile, 1983). As a result, the individual diverging from the cultural block may receive psychological isolation and estrangement from his peers.

The fundamental problem of the highly creative individual in maintaining his creativity is in learning how to cope with the discomfort that arises from divergency. Rollo May (1975) as cited in Richler, Fortier and May (1975) says,

> The creative person is what is called the authentic person, and to be authentic means to be author of yourself; it means to live your own life, living what comes out of you, out of your originality and your uniqueness. (p.10).

Courage is required to move ahead into no man's land, to accept nothingness and to move ahead despite the anxiety. Although teachers show an increasing awareness of the need and the opportunities for encouraging creative behaviour, our present educational system to a large extent still overlooks the intentional enhancement of creative behaviour. Frank Williams (1963), as cited by Parnes (1967) summarizing a variety of investigations, stated that the studies have been consistent in their findings about the frequency of certain behaviour between teachers and pupils. Approximately one-quarter to one-half of the total classroom time was spent telling students what to do. Only 5% was devoted to reinforcement of student responses (reinforcement for creative responses was almost completely lacking). In addition, the teachers allotted only about one and one half percent of the classroom time to decision making functions. Harold Rugg (1963) as cited by Parnes (1967) wrote, "We have had millions of hours devoted to training in solving problems by reasoning, but almost none devoted to cultivation of the imagination." Antoinette Patterson, a counsellor and philosopher, has expressed the problem this way:

> Every human being has a creative urge and feels it... Life-environment does not appear to allow full-play to our creative energy.
>
> If we want young human animals to command their nature, we must nourish their necessary acts toward obedience to that nature. Too much of our effort has been wasted trying to command their nature for them, out of obedience to our own cultural stereotypes.
>
> As educators, we are faced with the dilemma of accommodating both a structured curriculum and the unstructured, spontaneous, curiosity-suggestions, curiosity-questions. We wind up fighting the student's need to express himself creatively.
>
> Eventually, in order to get along, he gives up the "self-comfort" image and buries the comfort-urgings out of guilt and shame for having them. We have forced him into imagining an unworthy self -- a hostile self. We have forced him into hiding that tortured self away from everyone. He lives alone with his miserable secret. All this guilt and anxiety drains off large quantities of his creative energy. In education, we work with only a trickle of his creative flow because we have dammed up the river of self which contains that powerful mineral -- <u>imagination</u>.
>
> (Parnes, 1967, p.58)

Although there has been much emphasis on creative teaching methods (the imaginative use of materials, e.g. film, demonstrations, etc.), there has been relatively less emphasis placed on the development of creative behaviour in the student. Teaching in ways that impart information more effectively and in a more interested manner does not qualify as teaching for creativity development.

Think of the school situation as a group or organization that can be creative primarily in the sense that its leader is highly creative and directs the personnel autocratically in implementing his creative ideas. On the other hand, an organization can be creative primarily because its leader subtly stimulates the creative productivity of the

individual members. In the former organization, the main rewards to the individual are apt to be those which are customarily enjoyed off the job -- salary, vacations, and those benefits that are handed out by the leader -- or, at best, environmental and social conditions that an individual enjoys on the job. Primarily, however, the benefits are tangible.

Leadership for Creative Growth

The organization that provides for creative growth of the individual is one wherein the intrinsic satisfactions are often greater than the extrinsic rewards, for example, the sense of contributing a major portion of oneself to the job or the sense of self-expression being tangibly rewarded (Knoop, 1981). The individual in this type of organization is too busy applying his creative energies to a job or his studies to watch a clock. He becomes totally involved in the tasks at hand. In the process, he discovers himself. A teacher or supervisor with this goal in mind actualizes his own creative potential, effectively uses his external resources and makes something happen within the learner (Parnes, 1967).

The spoon feeding present in society in terms of "how to do it" instructions, models or the encroaching philosophy of compulsive adherence to behavioural models prevents opportunities for natural creativity (Parnes, 1967). Be it ever so exciting, some of our new technological advances like the computer program, if not designed with concern for augmenting creative thought, can reinforce rigid thought

patterning. Students will fail to develop or retain the attitudes and abilities necessary to meet new or changed conditions comfortably and confidently (Parnes, 1967).

2.10. Influence of the Nursing Environment on Creativity

Traditionally, nursing rewards and encourages efficient standardized management of patient care. Many nurses rely heavily on fixed procedures and constellations of actions. Implementing the standard expected procedures often yields the highest personal professional rewards, as was previously discussed. The human organism has learned well to avoid anxiety situations. The student hoping for group acceptance will aim to modify her behaviour to the behavioural norms of the group (Boraas, 1924). It is comfortable and safe to rely on standardized procedure for care, especially if one is unable to evaluate patient status by a skillful assessment and sound clinical reasoning. Traditional nursing settings are usually devoid of any behaviours that could be classified as creative. Staffing designs for the benefit of the group aim for time efficiency in carrying out traditional nursing procedures. A constant repetition of standardized procedures if not checked, however, can lead to a lack of individualization of patient care (Laws and Fode, 1981). The student nurse may perceive herself as competent because she implements traditional operating behaviours, but these may not be important or appropriate if each patient is not assessed as a unique, valuable entity whose management plan needs to be creatively tailored to his individuality. An example is the student who recalls from memory that obese patients should be taught lower calorie dietary programs. If the eager student lectures the patient on dietary

programs, she may just be focusing on the alleviation of symptoms and not the problem. On the other hand, if a student approaches the same patient as an individual, she will delve first of all into an investigation of the cause of the symptom obesity using a directed search to gather other relevant data. With sensitivity and good interviewing skills, she may discover that the obesity is due to deeper personality disorders requiring a different management plan than a lecture on dietary alternatives. When she helps the patient explore his personality dynamics she may utilize personal creativity to suggest ideas for patient decision making on the most appropriate management plan for his specific situation. In this way the patient's level of care is influenced by the personal creativity of the nurse. Despite creativity's influence on management decision making it is generally not encouraged.

Nurses are not generating new ideas to modify their environment to the same extent as many other professions. New technology, for example, is seldom introduced by the nurse. Employee incentive programs to foster the development of nursing creativity are foreign to the nursing culture. If creativity is seen at all in nursing it occurs when the nurse is given room to grow and internalize a greater responsibility for assisting patients to participate in their care such as community nursing or other expanded roles. The community nurse is a creature who uses creativity constantly in her everyday interaction with her patients. She does not have the convenience of stock supply cupboards and available standard procedural equipment. She is forced to improvise, use her creativity and make individualized patient decisions

under whatever conditions she finds her patient. While in the hospital setting it is relatively easy to find a sterile container to give a treatment; the community nurse has to find alternatives in the home environment and create her own tools for sterile procedures. In this way, she is constantly cognitively stimulated to recall from memory those vital principles necessary for care. This retards the development of patterned behaviour.

The task of the community nurse also influences her ability to be more creative. She is not in a patient's home for clerical, housekeeping or administrative tasks. She is there to implement nursing care. Her focus is on the patient as a person, understanding his unique situation as well as if it were her own. Under these conditions, and given the type of task, innate creativity will blossom. Being on the patient's own turf, she does not make the error of attempting to own the patient's problem. She allows the patient to participate in every step of his health care program. By keeping the ownership of the problem with the patient, the nurse can be properly perceived as a resource to help him through a crisis. She never takes the role of expert as each patient knows his unique situation better than anyone else. This role gives her the cognitive freedom to generate creative unique ideas to assist the patient in managing his specific problems. She helps him implement reality based health care measures involving the total person, environment and family. Nursing education curriculum primarily teach the basic and social sciences with a focus on developing technically competent nurses. Opportunities for student creativity are sparse. Barrows and Tamblyn (1980) states the heavy content load tasks leaves no

room for digesting the problem-solving process. The awesome tension of the nursing environment is like no other in reinforcing conformity and repression of self creativity development. As a result, the student is never challenged to design novel task solutions relying on their innate creativity and mobilizing prior learning. (Jenny, 1976). Instead, they become the passive recipients of standardized methods for technical tasks. It is no small wonder students gravitate upon graduation to the comfortable heavily structured in-patient environment.

If one hopes to develop the student's ability to creatively generate a wider selection of appropriate ideas for patient care, curricula need to be structured to directly nurture the innate creative talent. (Parnes, 1967). This review has shown a multitude of factors influence the expression and development of personal creativity restricitng its effect on management decision making.

CHAPTER THREE

THE METHOD AND MATERIAL

3.1. Introduction

This chapter will describe the various materials used and steps taken to achieve the aims of the study outlined in Chapter 1. The first section describes the characteristics of the sample chosen and how they were recruited for the study. The second section outlines the development of a method for measuring quality of decisions for patient management. Descriptions of the psychological tests are in the final section followed by an outline of the method of data analysis.

The experimental design closely follows that introduced by Dr. Michael J. Stephenson (1980) in a study on "Clinical Management and Creativity in Family Medicine".

3.2. The Sample

The study sample was selected from the nursing students randomly assigned to Module 6, Level 2, Mohawk College Nursing Program. Review of the research on problem-solving skill analysis shows that successful learning of problem-solving skills depends on the acquisition of both processes and content knowledge. As decision making ability varies as well with the context and the individual's role in an organization, an attempt was made to keep these factors constant in the study sample.

The group was homogeneous for length of time in the nursing program, exposure to the process of problem-solving, enrollment in the nursing course Module 6, and clinical placement on a neurological hospital ward. Module 6 is a set of cognitive, psychomotor and affective student learning objectives pertaining to neuropathology, endocrinology and dermatology to be mastered by nursing students during a seven week rotation. All students had field or clinical experience during this rotation on an acute care neurological in-patient hospital ward.

Each potential study participant was sent a letter requesting her help and outlining the study (Appendix 1). This approach led to 15 out of 19 students participating in the study.

3.3. Ethics of the Study

As the study used human volunteers as subjects the study protocol was submitted to an Ethics Committee. The committee reviewed the protocol and accepted it. Confidentiality of the results was ensured by identifying each participant by number only. The students were asked to sign a consent form (Appendix 2) to indicate they were fully informed about the study and participated voluntarily.

3.4. Decision Making Measurement Method and Materials

This section will deal with the choice of method to be used in the study, and the development of the written nursing management problem. The methods of establishing the problem's validity and reliability are discussed, the classification of management options and their scoring are outlined.

3.4.1. Choice of Method

The literature review identifies several ways to measure decision making. These are direct observation (Barrows et. al., 1978) and written simulations. (McGuire et. al., 1976). Direct observation was not chosen because it is a lengthy, expensive procedure. Among written simulations the most popular type is the Nursing Patient Management Problem (NPMP). Dr. Michael J. Stephenson's (1980) study on Clinical Management and Creativity in Family Medicine was selected as a model for the research design. Although his study sample was family physician residents, the method of measurement was thought transferable to tap the decision making and creativity of nursing students.

The format used in this study was a highly structured written modified case history, assessments, identification of the diagnosis, problems and physician medical management. This format was used because:

(a) It allows exclusion of the data gathering and problem identification stages of the problem solving process, allowing concentration on the decision making, specifically the implementation of decision alternatives stage.

(b) It allows the case history to be modified so that the student was presented with a data base similar to what she would have had available from a patient chart or clinical interview.

(c) The unstructured answer allows the assessment of both the number and type of solutions offered. The problem of cueing was overcome as no lists of decisions for care or management options were given.

3.4.2. Nature and Development of the Nursing Problem

The problem was designed to duplicate a typical patient problem found in the student's clinical experience with the following characteristics:

(a) the problem is complex, multi-system and involves the patient's environment
(b) the problem is resistent to simple solutions
(c) multiple solutions are possible and there are few objective criteria for assessing the best solution
(d) the problem contains organic, psychological and social factors

It was adapted from a case study widely used by Barrows and Tamblyn, (1977) in their Portable Patient Problem Pack (P4 decks) as a method of analyzing clinical reasoning skills in medical students. The final version of the nursing problem is presented in Appendix 5.

3.4.3. Validity of the Nursing Problem

(a) Content Validity

To ensure high content validity the problem situation selected met the following criteria:

(1) reflects the same areas of cognitive, psychomotor and affective knowledge as the students were exposed to in Module 6 of the Mohawk College Nursing Program.
(2) is relevant to their clinical context.
(3) is at their level of training in the nursing program at Mohawk College (in Level 2).
(4) consists of a sample of simple and difficult problems.
(5) more than one appropriate decision is possible.

(b) Face Validity

This is the indication of whether the instrument appears to measure what it claims to measure. In this study this was determined by (i) expert neurological nurses, neurologists, and (ii) the students, at the conclusion of the study, who were asked if they thought the problems were realistic problems that one would encounter in the clinical area.

These two groups were asked to answer a question (Appendix 7).

3.4.4. Reliability of the Nursing Problem

Inter-rater Reliability

This is a measure of the reproducibility and accuracy of the scoring system. After a training period the scores obtained from a sample of student responses were independently rated by two Mohawk Nursing Faculty.

3.4.5. Classification of the Decision Options

From the sample answers obtained during the nursing problem pre-testing, a general idea of the type of answers one could expect was obtained. Answers were in phrase form. Each decision option was assigned to a major category after Stephenson (1980) ((a) standard technical, inter-personal, ecological (b) unique). This formed the criterion set of appropriate answers. The criterion setting team consisted of a neurological nurse clinician, a senior neurological nurse and two junior neurological nurses. After Stephenson (1980), each decision was called a management option defined as "any decision or action" by the nurse or the patient designed to alter either the natural history of a problem

or the consequences of that problem. This category was further sub-divided.

The divisions were based on Donabedian (1979) as cited by Stephenson (1980), who stated "patient care has two components: "technical and inter-personal." He defined technical as pertaining to the "application of the science and technology of nursing", and inter-personal as pertaining to "management of the social and psychological interation between patient and practitioner". A third category after Stephenson (1980) was called Ecological and pertains to "management of factors in the patient's environment affecting the patient". In addition, a fourth category was added: Unique. This includes decisions for care which satisfy the conditions of the three prior categories but are not included in the criteria of standard decisions and are therefore seen as original and unique. Examples of each can be found in Appendix 4.

3.4.6. Scoring Strategy

From the total list of standard decisions submitted by the criterion setting group those most frequently selected were categorized into technical, inter-personal or environmental. The total number value achievable for each sub-category varied from seven to four. This variation was determined by the criterion groups weighting for each sub-category, for each of the 11 problems identified within this patient management problem.

The ranges of achievable sub-category scores are displayed in Fig. 5. The minimum overall score determined by this criterion group was 34, and a maximum score of 68 was possible. Some sub-categories had a greater number of decision selections available than the two or four value maximum. In these categories, all of the decisions were equally valued for competent patient care, but only a portion was deemed necessary for competence by the criterion setting group.

FIG. 5

ACHIEVABLE VALUES FOR SUB-CATEGORIES OF STANDARD DECISIONS FOR NURSING CARE

Problem Number	Standard Decision Type					
	Technical		Inter-personal		Environmental	
	Min.	Max.	Min.	Max.	Min.	Max.
1			2	4	1	2
2	2	4	1	2	1	2
3	2	4	1	2		
4	2	4	1	2		
5	2	4			1	2
6			1	2	1	2
7	2	4	1	2		
8	2	4	1	2	1	2
9			1	2	1	2
10	1	2	1	2	1	2
11	2	4	1	2	1	2
	15	30	11	22	8	16

Minimal Decision Score	34
Maximum Available Decision Score	68

The following scores were obtained for total patient management (i.e. viewing all problems).

(a) the total score for each category (technical, inter-personal, ecological and unique)
(b) the total score of all categories of all problems (total patient management score)

Each participant was asked to describe a complete plan of action for the patient management problem in the form of her choice. A freedom of response such as a short essay or short statement is needed to measure complex problems that include the ability to create, to organize, to integrate .... or to express similar behaviours that call for the production and synthesis of ideas (Gronlund, 1968). Multiple choice answering was not selected to avoid cueing and limiting the decision alternatives for patient care.

3.5. Psychological Determinant Measurement, Materials and Methods

This section will consider the psychological tests used in terms of their reliability and validity. The data collection and analysis methods are then described.

3.5.1. Psychological Tests

Problem-Solving

In this study the student's non-specific cognitive skill of problem-solving was measured by his level of critical thinking as measured by the Watson Glaser Critical Thinking Appraisal.

The Watson Glaser Critical Thinking Appraisal

I. Definition of Critical Thinking

In the context of this test, critical thinking is viewed as a composite of attitudes, knowledge, and skills.

The composite includes:

(1) Attitudes of inquiry that involve an ability to recognize the existence of problems and an acceptance of the general need for evidence in support of what is asserted to be true.

(2) Knowledge of the nature of valid inferences, abstractions, and generalizations in which the weight or accuracy of different kinds of evidence is logically determined.

(3) Skills in employing and applying the above attitudes and knowledge.

The Critical Thinking Appraisal (CTA) seeks to provide an estimate of an individual's standing in this composite of abilities by means of five sub-tests, each designed to tap a somewhat differing aspect of the composite.

A high level of competency in critical thinking, as measured by the CTA, has been operationally defined as the ability to perform correctly the universe of tasks represented by the five sub-tests.

Items were designed to reflect the following abilities that appear to be related to the concept of critical thinking (Dressel and Maynew, 1954 as cited in Watson and Glaser, 1980).

(1) The ability to define a problem
(2) The ability to select pertinent information for the solution of a problem
(3) The ability to recognize stated and unstated assumptions
(4) The ability to formulate and select relevant and promising hypotheses
(5) The ability to draw valid conclusions and judge the validity of inferences

> "Judgements of qualified persons and results of research studies support the author's belief that the items in the Critical Thinking Appraisal represent an adequate sample of the above five abilities and that the total score yielded by the test represents a valid estimate of the proficiency of individuals with respect to these aspects of critical thinking (Houle, 1943; Morse and McCune, 1957, as quoted in Watson and Glaser, 1980, p.1).

II. Description of Watson Glaser Test

The test includes five sub-tests:

(1) Inference: discriminating among degrees of truth or falsity of inferences drawn from given data.

(2) Recognition of Assumptions: recognizing unstated assumptions of presuppositions in given statements or assertions.

(3) Deduction: determining whether certain conclusions necessarily follow from information in given statements or premises.

(4) Interpretation: weighing evidence and deciding if generalizations or conclusions based on the given data are warranted.

(5) Evaluation of Arguments: distinguishing between arguments that are strong and relevant and those that are weak or irrelevant to a particular question at issue.

There are 16 items in each sub-test; 80 items in total.

Item Content

The exercises include problems, statements, arguments and interpretations of data similar to those that are encountered on a daily basis.

Two different types of item content are utilized:

(1) Items having "neutral" content deal with the weather, scientific facts or experiments and other subject matter about which people generally do not have strong feelings or prejudices.

(2) Items having "controversial" content, although approximately parallel in logical structure to neutral items, refer to political, economic, and social issues that frequently provide very strong feelings. Studies have shown that strong attitudes, opinions and biases affect the ability of some people to think critically (Jaeger and Freijo, 1975; Jones and Cook, 1975; Mitchell and Byrne, 1973; Sherif, Sherif and Nebergall, 1965, as cited in Watson and Glaser (1980).

The CTA is designed as a power test, not a speed test; however, the usual completion time is 40 minutes.

All items have been assessed for reading difficulty such that both Forms A and B are deemed appropriate for use with persons who have the equivalent of a grade nine education.

III. Scoring and Interpretation of Results

CTA is easy to score, the raw score being the total number of correct responses (maximum score - 80).

Norms have been developed and tables of percentiles presented for various samples:

(1) high school students (grades 9-12)
(2) college students (various levels)
(3) pre-professional groups of students
    third-year medical students at a university in the West
    (sample: N = 127 score = 66.6 s.d. = 8.6)
(4) business employees, civil service employees and applicants

Differences in mean scores among high school and college groups are in the expected direction (i.e. the higher the grade level, the higher the mean score on CTA; college students scored higher than high school students).

Third-year medical students and MBA students scored highest of all post-high school groups.

No consistent differences have been found between males and females on scores of CTA.

VI. Reliability

The reliability of CTA has been assessed for internal consistency, the stability of test scores over time, and the correlation between scores on alternate forms.

(1) Internal Consistency: Split-half reliability coefficients (Spearman-Brown formula) range from .69 to .85 (calculated for 10 of the CTA norm groups).

Third year medical students: N = 127 $\bar{M}$ = 66.6 s.d. = 8.6 r = .85

(2) Test-Re-test Reliability: CTA administered twice to a group of college students (N=96) with an interval of three months between testing periods.

Time 1: $\bar{M}$ = 57.4 s.d. = 8.1

Time 2: $\bar{M}$ = 56.8 s.d. = 8.4

Correlation between responses at two time periods is .73.

(3) Alternate-Form Reliability: Calculated by correlating responses of subjects who took both Forms A and B of the CTA.

For a group of twelfth grade students (N = 228) the correlation or responses to Form A and those to Form B is .75.

Form A: $\bar{M}$ = 46.8 s.d. = 9.8

Form B: $\bar{M}$ = 46.6 s.d. = 9.3

V. Validity

Construct Validity

Students at advanced levels in liberal arts training have been found to perform at higher levels on the CTA than those who have had less exposure to a college curriculum.

VI. Correlations with Other Tests

CTA has been shown to relate to various measures of academic achievement including the Stanford Achievement Tests, overall grade point average, and individual course grades.

High correlations are found between scores on the CTA and scores on The Otis, Otis-Lennon Mental Abilities Tests, The California Test of Mental Maturity and The Wechsler Adult Intelligence Scale (Verbal).

High correlations have been found with other ability measures such as the Miller Analogies Test, The College Entrance Examination Board and the Scholastic Aptitude Test and The American College Test.

Correlations between sub-tests and total scores on Forms A and B combined range from .50 to .69 indicating good internal consistency and support for the notion that CTA is measuring a unidimensional aspect of ability distinct from overall intellectual ability.

3.5.2. Creative Personality

Creative personality in this study was measured by the Barron Welsh Art Scale (BWAS). One of the hallmarks of a creative person as defined by Barron is his preference for complexity and non-conformity. This test measures high and low levels of these traits which he called the measure of "origence" or originality.

Someone with high origence is characterized by the following:

prefers unstructured environment, as they can then initiate structure
resists conventionality
prefers to do things on own even if unpopular and unconforming
values individualized interpretation; therefore is often interested in artistic, literature and aesthetic originality
expression of impulse

Someone with low origience is characterized by the following:

prefer order, structured and regular environment
conformist
likes to apply objective rules
repression of impulses
subservience to authority

The test consists of 62 black and white figures in a booklet. It is a non-verbal measure of complexity-simplicity related to artistic taste and talent. Subjects indicate whether they "like" or "dislike" the figures which range from simple geometric forms to diverse complex patterns and designs. Barron reports an odd-even reliability of .96 and a test-re-test reliability of .91 after six months. The BWAS has differentiated "creative" from "non-creative" professionals, artists, writers, architects and research scientists as well as other group studies. The scale has been significantly correlated with fluency and originality scales from the Guilford battery. The BWAS has been consistently related in various research studies to such traits as criticalness, touchiness, liberal attitudes and independence. The results of several studies suggest that the BWAS scores are higher for people in higher social class. The preference for asymmetrical designs may be mediated by education and social class, possibly by opportunities to develop aesthetic sensitivity. Research by Baird (1972) suggests the scores on BWAS may be due to preferred styles of perception.

3.6. Data Collection

All three paper and pencil measurement instruments were administered concurrently on a pre-arranged date at Mohawk College by the researcher. Total test time was two hours. The study population was blind as to the specific problem under investigation. General principles for the administration of tests were followed (Lien, 1967). This includes principles to call forth the student's best effort such as a favourable testing environment, and provisions for proper motivation of the student. Participants were assured that their academic status as students would not be affected, that the results were not for individual assessment, but that groups of students' results would be viewed together. It was emphasized that this would be an enjoyable task, and that nutritional supplements would be provided at the end of the testing period. A letter of invitation was given one week prior to testing date (see Appendix 1).

3.7. Analysis Methods

In this section the method of analysis is outlined. The computer program "Minitab" Pennsylvania State University 1982 was used for statistical analysis of all data. The data from the N.P.M.P. and the psychological tests (B.W.A.S. and W.G.C.T.) test scores are listed by identification number of the sample (Table 3).

The data are analyzed to generate a Pearson Product Moment correlation between the N.P.M.P. and the psychological tests (Table 2). The reliability of the psychological tests was discussed earlier. The analysis (Table 2) shows to what extent the N.P.M.P. is related to these two established instruments.

The data from the N.P.M.P. was analyzed for inter-rater reliability. The data from the N.P.M.P. using the Minitab program was used to generate an analysis of variance to examine the frequency of decisions in each of the four sub-categories in the N.P.M.P. (technical, inter-personal, ecological and unique). The need was to discover what percentage of management decisions was in each of the four sub-categories. These results are in Table 3. The Mean and Standard Deviations for all instruments (B.W.A.S., W.G.C.T. and N.P.M.P.) were calculated together with means for each decision category (i.e. technical, inter-personal, ecological and unique). These results are in Table 4.

CHAPTER FOUR

RESULTS

4.1. Overview

This chapter presents the results of this study: the development of the management decision making evaluation tool and the study hypothesis testing. (The statistic test used is the Pearsons Product Moment Co-efficient (r).) Individual results on all instruments appear in Table 1.

4.2. Evaluating Management Decision Making

This section deals with the ability of this instrument to assess nursing decision making, level and type.

(a) Content Validity

The content of the Nursing Patient Management Problem was analyzed and reported in section 3.4.3.

(b) Face Validity

This was determined by asking neurological nurses, neurologists and student nurses to rate the nursing patient management problem on a five point rating scale from 1 = not at all realistic to 5 = very realistic (Appendix 7). A minimum value of 3 = realistic was chosen for acceptable face validity.

TABLE 1

EXPERIMENTAL RAW SCORES

STUDENT NO.	BWAS	WGCT	NPMP	T	I	E	U
1	45	69	48.5	26	7.5	6	9
2	28	49	29.5	17.5	4.5	2	5.5
3	23	48	29	15.5	7.5	3	3
4	11	61	36.5	20	5	5	6.5
5	8	49	24.5	12.5	4.5	3	4.5
6	17	43	41	20.5	5.5	5	10
7	33	66	37	21	5	5	6
8	11	57	38.5	22	6	4	6.5
9	41	56	31.5	16.5	5	4	6
10	34	52	28.5	17	5.5	2	4
11	11	63	41.5	22.5	5.5	7	6.5
12	9	50	37	23	4.5	4.5	5
13	0	55	31	18.5	2.5	5.5	4.5
14	9	57	43	26.5	5.5	2.5	8.5
15	38	70	32	17.5	2.5	5.5	6.5
TOTAL	318	845	529	296	82	64	98
MEAN	21.2	56.33	35.27	19.76	5.46	4.26	6.5
N > M	7	7	8	8	7	8	7
N < M	8	8	8	7	8	7	8

Table 2 shows all respondents felt the problem situation is highly realistic and has sufficient face validity.

4.3. Reliability

Inter-rater Realiability on the NPMP

This was tested by comparing the percentage agreement between two independent raters on all 15 participant NPMP scores. The following values were derived from a one way analysis of variance:

MSA = mean square amongst students
MSW = mean square within students
K = number of observers

Using these values and the following formula (Winer, 1976) the inter-rater reliability was calculated:

FIG. 6

RELIABILITY FORMULA

$$R = \frac{MSA - MSW}{MSA + (K - 1)\ MSW}$$

$$R = 0.94$$

Therefore, the reliability among raters on a single observation is .94. The mean of the two raters was calculated to be 0.96. In conclusion the rating has good inter-rater reliability.

The problem used in this evaluation instrument has good content and face validity as well as a very high inter-rater reliability.

TABLE 2

ASSESSMENT OF FACE VALIDITY OF NURSING PROBLEM SITUATION

Staff Nurses and Neurologists (N = 4)	5.00
Nursing Students (N = 15)	5.00

Range of Value 1 = not realistic 5 = very realistic

4.4. Psychological Test Assessment

Both psychological tests were scored by an independent rater and the researcher using the scoring key for the standardized tests. Full agreement in scores was achieved between raters.

The relationship between the psychological tests and the nursing patient management problem total score is displayed in the Correctional Matrix Table 3. This shows that:

(a) the Barron Welsh Art Scale had a low positive correlation with the Watson Glaser Test ($r = 0.399$).

(b) the Barron Welsh Art Scale had a low positive correlation with the total management decision score on the Nursing Patient Management Problem ($r = 0.040$).

(c) the Watson Glaser Critical Thinking test had a low but positive correlation to the Nursing Patient Management Problem total score ($r = 0.425$).

Although correlations are low, they are in the expected directions. Likely, the independence of the skills which each test measures as well as the small sample size affected the results.

TABLE 3

CORRELATION MATRIX

	NPMP	WGCT	BWAS
BWAS	0.040	0.399	+ 1.00
WGCT	0.425	+ 1.00	
NPMP	+ 1.00		

4.5. Sub-category Analysis

Table 4 displays the relationship between sub-categories scores and the total management score. The hypotheses tested in this study stated there would not be a statistically significant predominance of one type of management decision. This null hypotheses is rejected at the 0.001 level of significance found in Table 5. This table tells us the student responses of frequency count amongst categories do differ significantly.

The second question asked of these statistics was to show where the differences occur? Pairwise comparisons (simple t test) were conducted for all the possible combinations between all categories. The confidence levels for the various sub-categories appear in Table 6. This data shows a real difference even when adjusting the "p" value for multiple comparisons.

Another way of communicating this message using Table 4 is that of the total number of management decisions made, 56% are technical, 14% are inter-personal, 12% are ecological and 18% are unique. Note that 82% of the management decisions are what is regarded in this study as standard, i.e. technical, inter-personal and ecological. It is clear from the data that technical decisions predominate.

TABLE 4

COMPARISONS BETWEEN THE TOTAL MANAGEMENT DECISION SCORE AND THE SUB-CATEGORY SCORES

(N = 15)	Mean	S.D.	% of Total Score
Total Management Decision Score	35.27	6.56	
Technical Decision Score	19.77	3.88	56
Inter-personal Decision Score	5.10	1.40	14
Ecological Decision Score	4.27	1.51	12
Unique Decision Score	6.13	1.90	18

TABLE 5

COMPARISON AMONGST SUB-CATEGORIES

ANALYSIS OF VARIANCE TABLE

Source	DF	SS	MS	F	$p < 0.001$
Factor	3	2424.28	808.09	141.11	
Error	56	320.70	5.73		
Total	59	274.98			

TABLE 6

PAIR WISE COMPARISON OF THE MANAGEMENT DECISION SUB-CATEGORIES

	Technical	Inter-personal	Ecological	Unique
T	-	t = 13.78 p 0.001	t = 14.43 p 0.001	t = 12.23 p 0.001
I	-	-	t = 1.57 p = 0.13	t =-1.69 p = 0.10
E	-	-	-	t =-2.98 p = 0.006
U	-	-	-	-

4.6. Relationship of Level of Management Decisions to Criteria Group

In Chapter Three under the method selected for this study, the scoring system was outlined (3.4.6.). The minimum score established by the criterion group was 34 for the total management score on the NPMP. (Chapter 3, Fig 5.). Examination of Table 1 shows the mean score for this study sample was 35.27 N = 15. Of those 15, eight students scored above the mean and above the minimum criterion score.

4.7. Summary

This chapter has reported the results of the evaluation instruments. The two psychological tests show a low but positive correlation to the management decision score from the nursing patient management problem. These results are likely low mainly due to the small sample size and the specificity of cognitive skill which each test measures.

The newly developed evaluation instrument has good content and face validity as well as a very high inter-rater reliability. These are desirable qualities in any measurement instrument. This would make it an appropriate choice for future nursing research. Both nursing education and employment settings may find this tool of assistance as a means to evaluate the level and the type of nurses' management decisions.

This data gives support to subjective opinions that the focus of management decisions of a nurse is on implementing standard and technical procedures for patient care.

The influence of the sample's beginning experience and status in the discipline cannot be disregarded as a factor which may affect the results. Clarification of the influence of experience on the type of management decision is the challenge of further research.

CHAPTER FIVE

DISCUSSION

5.1. Overview

This chapter will be divided into three sections. In the first section the method of measuring decision making will be reviewed to ascertain its strengths and weaknesses with suggestions for further research. The next section will review the results of testing the study hypotheses with discussions and possible explanation of the findings. The third section will be directed at the implications of the study results for nursing education, post secondary education programs and the nursing environment.

5.2. Method of Measuring Decision Making

The Scoring System

The use of a completely open answer format, while useful, presents time and personnel constraints in scoring. Even with a criterion base the process of extracting the content of the decisions by content analysis limits the size of the study. The use of a well designed multiple decision selection list would allow computer scoring for a larger sample. Although classification of unique decisions was time consuming, the high inter-rater reliability supports the feasibility of assessing this type of decision-making according to a criterion base.

Limitations of the Patient Situation Data Content

In order to maintain a manageable amount of data, the amount needs to be restricted. This limitation should not interfere with the management quality because as Barrows et. al. (1978) found, the amount of information gathered (in this case, given) is unrelated to management outcomes. Participants in this study felt the data provided was adequate.

Usefulness of the NPMP

Students found this evaluation tool easy to use and an enjoyable experience. They felt the instructions, problem presentation and partial analysis were at their comprehension level.

Test Reliability

It is difficult to be conclusive about the reliability of this evaluation tool due to the small pilot study size. It is, however, one of the closest approximations of reality that can be inexpensively implemented in a larger group. One limitation frequently voiced by critics is the ability of a simulated exercise to measure real clinician behaviour. Most comparisons of simulations using a variety of formats (written, standardized patients, computer simulations and reality) show that the level of a clinician's problem-solving ability and her sensitivity to individualize patient care is consistent in both settings (Stephenson, 1980). This means if a clinician achieves a high score on patient management during simulation he is likely to perform consistently to this with a real patient situation. The task of actually recording actions is not as consistent. Record Audit review

of experienced physicians by Neufeld, Norman, Woodward and Walsh (1985) shows physicians in his sample record only one quarter of what actually transpires in patient management.

It is wise to be aware of this fact that clinicians are not recording what actually takes place, but to view the finding in light of the discipline, professional status, experience and time restraints of medical practice of Neufeld's group before application is generalized to this student nursing sample group.

Interpretation of Data

5.3. Psychological Determinants

A. Problem-solving

The mean raw scores of this group of nursing students was 56.33 on the Watson Glaser Critical Thinking Test. The statistical norms for a similar reference group show that sixty five percent of students in junior college and community college have a raw score of 55 - 56. Fifty percent of nursing students in a Baccalaureate Program at a University in the South U.S.A., obtained a score of 55 - 56 and the mean score for this group also was 56.1. SD 7.5

The level of this score is consistent with recent results of admission screening tests for colleges and universities. These screening tests reveal many college students are not adept at several basic cognitive constructs including problem-solving.

Relationship of the Watson Glaser Critical Thinking Score to the Management Decisions Score

The relationship between the student results on the Watson Glaser Critical Thinking Test and their total Management Decision Score was a low positive correlation r = 0.425. There are several reasons why this may be so.

First, the learners are such beginners at the process of problem-solving that their responses are highly variable and not consistently established. This adds a variation into the data that would be difficult to deal with.

The level of experience of the sample, memory content and sample size all tend to limit the generalizability of the results. Despite the confinement of studying such a circumscribed group, this trial pilot study points in the direction of the presence of a positive, usefully large correlation between the level of problem-solving skill and level of management decisions.

Examination of Table 1 shows that of those students who obtained high scores (above the mean) on the WGCT six out of seven also produced high scores (above the mean) on the NPMP. Again, due to the small study size these results are not generalizable but in the expected direction.

B. Creativity and Management Decisions

The mean score for this study sample on the BWAS was 21.2. Compared with norms, this is consistent with tenth grade girls (M = 21.5, N = 86).

Literature reviews show similar results, that commercial and scientific groups score lower than literary and artistic groups. The low positive correlation to the NPMP and the low score compared to other segments of the population may be interpreted in several ways.

(1) selecting unique management decisions is not perceived as a valuable nursing behaviour and therefore not selected in this test.

(2) the BWAS does not measure the type of creativity demonstrated by unique decisions for care as measured in this study sample.

(3) creativity including the ability to select unique management decisions is not a personality characteristic in this group of nursing students.

Although the size of the sample is small the results would support the literature review that most nurses are not creative and most do not use creativity in their role. There may be a self selection bias. Nursing may attract intelligent but not necessarily creative people.

Hypothesis

The sub-category comparison reveals a predominance of technical types of management decisions. Technical choice may be due to an admixture of determinants such as the student's self, environment and task as previously discussed. Student values are still in the formative years and may find more psychological rewards of security and self-concept in giving procedural care which yields immediately visible results. These

neophyte's in the nursing profession model whatever professional behaviours that are predominantly displayed in the clinical experience area. The students have more opportunity to observe staff nurses doing technical procedures, than to dialogue about the nurse's management decision making process, witness inter-personal management decisions or observe unique management plans. Even if these types of management decisions are available in the environment, the student may be cue deaf as her focus is on procedural effectiveness at this level.

The nursing student is just commencing content mastery. Her knowledge and memory of concepts and facts will be greatest for those areas emphasized by the curriculum. Most nursing curricula focus on biological facts, theoretical principles and procedures for patient care. It is only logical then to produce students who select these areas for patient care management.

In contrast, Stephenson's (1980) study found that those physicians with high decision making scores selected inter-personal decisions predominantly over technical decisions. This difference may be explained by the discipline orientation, psychological determinants and environment, all of which determine the type of decisions physicians make for patient care.

Relationship of Total Decision Making Score to Uniqueness Score

Nursing students with high total decision making scores on the NPMP also had high unique decision making scores. This finding is consistent with Stephenson's (1980) study. Parnes (1963) has also demonstrated in

several experiments that the proportion of high quality ideas increased as the total number of options increased. Good ideas were judged on criteria of uniqueness and usefulness. The conclusion in this study is that those students able to generate a large number of quality decisions for patient care will at the same time generate a higher than average number of unique decisions for patient care.

The low level of unique decisions may be due to insecurity of self-expression. Students may be too timid to risk exposing their creative ideas for management or unconventional decisions at this point in their development.

For further understanding of these determinants, it would be interesting to apply this evaluation to graduate nurses and compare their results to the students of this study. The graduate nurse may generate more creative nursing management decisions due to a more ingrained memory of standard nursing procedures and the courage to individualize care.

5.4. Implications

This section deals with the application of this research to academic and employment environments. The purpose of this study was to observe the nature of nursing students' management decisions. Early career patient management decisions in this study show a predominance of technical type standard decisions. The reasons for technical selection over inter-personal or environmental can only be speculated upon. Review of the literature reveals a high level of support from a variety of sources for this procedural focus. In addition, it is likely that the students'

age and experience in the discipline influenced their ability to select inter-personal, environmental or unique decisions. As well, the student nurses most frequently observe and experience early in their clinical settings, roles where the focus of nursing is procedural decisions skill competency. The level of the understanding of cognitive skills and the problem-solving process as well as the need to teach patients rather than "do" for them, likely influence their scores.

The nursing employment environment may benefit from application of this style of evaluation at an individual staff member and management level. Staff could access a similar learning resource based on this design for self-evaluation and career development. Management may find the tool useful in measuring one aspect of quality assurance. For those who are concerned to what extent student nurses learn to see alternatives for patient care, these dfindings will be helpful.

To discover the extent of this technical focus in practicing nurses will be the work of subsequent studies.

Nursing education may find these results useful when reflecting on the goals of their program. Where an interest exists to utilize a broader selection of clinical competence evaluation formats this tool will help to tap the nature of nursing student management decisions. In addition, the NPMP is a useful learning resource to develop nursing students' problem-solving and decision making skills. It is one thing to conceptualize the process of problem-solving and quite another to demonstrate real life application. The NPMP of this study would help students and faculty learn the skills involved in problem-solving and decision making.

Future research of this tool in nursing education is planned utilizing a pre-test, post-test research design. This will assist educators and learners to measure the amount of change in the management decision making ability over time.

In addition, this tool is transferable to computer assisted learning. The same management problem can be programmed into a computer. The scoring system could be refined by compiling a Master Action List *. These future considerations focus on the continued sophistication of this tool. This new tool now fills a void that exists in all professions. The specific content makes it particularly appropriate for use in future nursing research, in nursing education and nursing employment settings.

The process of development is described in this work in enough detail that it can be replicated with content specific to other professional settings broadening its applicability.

Summary

This research provides an objective instrument to measure the level and type of decisions nurses make. Nursing management will be made aware of the feasibility of using a program as outlined in this research to develop or procure similar designs for organizational development in the nursing profession. Hopefully it will provide food for thought for nursing educators causing them to evaluate how their curriculum affects

* A Master Action List contains a comprehensive list of actions possible in the assessment of any patient problem used with Problem-Based Learning Modules (Barrows, 1983).

the quality of patient care of their graduates. It will support learning styles that sharpen students' critical thinking ability and teach the process of problem-solving in a climate that promotes freedom of thought and personal creativity helping individuals strive for realizing their potential and self-actualization. This tool is applicable to further research on evaluating management decisions within nursing and other professions.

5.5. Conclusions

This research study has designed a new valid evaluation tool to measure one aspect of the problem-solving process: management decisions. A scoring system was designed to classify types of management decisions. With this instrument it was determined that:

1. a higher decision making score was associated with higher technical and unique decisions.

2. technical decisions were the predominant type of decisions selected for patient management.

3. the level of management decisions of half of the group was above the minimum standard as set by a criterion group.

Findings show only half of the group is able to generate the minimum score as set by the criterion group. This finding may be interpreted as a measure of students' ability to apply the problem-solving process to a simulated patient problem. It may reflect lack of understanding of the

process or inability to apply concepts. The evaluations this test yields provide an additional method to evaluate student clinical competency.

The predominant type of management decision selected was technical. This supports literature reports and the focus of most nursing curricula and role descriptions in technical decisions are the predominant task of ward nurses.

The study found students to have low personal creativity which was expected from the literature. This may mean creative people are not drawn to nursing or that other environmental influences have repressed its expression.

Low but positive correlations between problem-solving ability and the NPMP instrument demonstrate a trend in the direction expected.

The results of this pilot study cannot be generalized due to the small study size. It demonstrates the feasibility of using written case simulations to measure one aspect of the problem-solving process: management decisions.

Summary

It is of interest to those involved in an analysis of whether the nurse uses a definable consistent cognitive process to generate management decisions. Research is not available on the problem-solving process of the nurse when generating decisions, but it is hypothesized she uses a

similar process to other professionals. Much of the current literature referred to supports a contention that a problem-solving model is used by other professionals (medicine, business, education, auto mechanics) when solving problems. This study marks an initial attempt to evaluate the level and type of management decisions made by nursing students. The study is looking for a pattern and findings to move the investigation of problem-solving and decision-making by the nurse to further levels. The findings of this study support the position that there must be some process used by nurses due to a consistency of type of management decision. The most frequent type of decision is technical. More work needs to be done to clarify whether the predominance of technical decision is an outgrowth of a problem-solving process, pattern recognition or reinforced standard behaviour.

This tool may be transferred to a computer assisted learning resource in future research work.

Comparison of student scores on the patient management problem and the critical thinking and personal creativity test show low but positive correlations. This may support references that state the nurse makes management decisions using a standard procedural level rather than active problem-solving or using creativity. This finding should be of value to those who seek to probe more deeply into the cognitive processes of the nurse.

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APPENDIX 1

INVITATIONAL LETTER TO NURSING STUDENTS

Dear

As part of my Master's thesis I am doing a study on problem solving in nursing practice and I need your help. To do this study I need volunteers at your level of training.

This study investigates whether certain ways of thinking influence the management of complex patient problems in nursing practice. You will be asked to:

A. provide written solutions to some interesting nursing practice problems.

B. do two standard thinking tests.

Little research has been done in this important area and this is the first phase of assessing methods to look into this area. I hope you will be able to participate as this study may result in new avenues of nursing education.

Complete anonymity is assured for each person in that he/she will be identified by a number on the test paper and results will be reported in broad categories. This work is independent of any work in your nursing courses.

A two hour session will be held in C217, Health Sciences Education Centre starting at (1) 1000 hours, (2) 1300 hours, (3) 1500 hours on February 11, 1985. You are asked to attend the most convenient one. Alternative arrangements can be made if needed. Refreshments will be served afterwards. In the next few days, I will phone to ask for your help and answer any questions.

Sincerely,

Kareen L. McCaughan
Master of Education Student
Brock University

KLM:md

APPENDIX 2

CONSENT FORM FOR THE STUDY

I agree to participate voluntarily in the study of problem-solving and thinking. I understand that I will be involved in one session where I will solve several problems and complete two standard thinking tests.

Signed_____

Witness_____

APPENDIX 3

RULES FOR SCORING THE MANAGEMENT PROBLEM

The basic unit is called a "Management Decision".

This is defined as any decision or action by the nurse or the patient designed to alter either the natural history of a problem or the consequences of that problem. It may deal specifically with the patient and/or his/her environment and support systems and/or his/her illness.

Each decision is scored as one.

Guidelines

1. Count as one each idea expressed whether it be a sentence or phrase (quantity).

2. If there is a general idea expressed that is then expanded into several components, then score the general idea as one and each component as one.

   ex. if the option is education about the dangers of smoking and obesity, then this is scored as three.

3. If a decision is mentioned in relationship to several problems then it is counted as one:

   ex. if the decision is increasing fluid intake for constipation and urinary tract infection, then this is scored as one.

4. Any decision by the nurse to do nothing is counted as one.

5. Any decision which effectively alters the problem is scored as one in the unique column.

APPENDIX 4

SUB-CATEGORIES OF MANAGEMENT DECISIONS

Technical Decision

This is defined as the application of the science and technology of nursing, e.g., positioning a patient.

Interpersonal Decision

This is defined as any decision pertaining to the management of the social and psychological interaction between patient and practitioner (it involves the patient directly).

e.g. counselling about separation anxiety
education about the need for increased bulk in diet

Ecological Decision

This is defined as any decision pertaining to the management of factors in the patient's environment indirectly affecting the patient.

e.g. consulting with the Victorian Order of Nurses to assist the patient in her home

Unique Decisions

This is defined as any action which satisfies the conditions of any of the three categories but is not included in the criteria of standard responses.

APPENDIX 5

NURSING PATIENT MANAGEMENT PROBLEM

Erin Young is a forty year old woman who has been admitted to your ward. She has been transferred from a small rural hospital where four weeks ago she was admitted with a sudden onset of weakness on the right side of her face and body. She is diagnosed as having a cerebral vascular accident thought due to long-term birth control pill usage. She is at present very concerned about the care of her five year old daughter as she is a single mother employed as a recreation director for the Board of Education.

Examination:

Vital signs: temp. 36.8 C
resp. 20
B.P. 100/70 pulse 70
Chest: productive cough, chronic, heard over bases of both lung fields
Genitourinary: reddened urethra, foul smelling urine
Skin: a three cm. reddened area on outer aspect of (R) malleolus with discharge

Neurological Examination

Mental status - alert and oriented to all spheres/time, place, person and purpose. The exam was contaminated by obvious expressive dysphasia
Aphasia testing - difficulties with verbal expressure
Cranial nerves - right homonymous hemianopia
- weakness of right facial muscles
Motor exam - (R) hemiparetic gait, reduced strength of muscles of (R) upper and lower extremity (mild weakness)
- tone: spasticity noted in (R) arm and leg

Physician's Management

Gantrisin, Valium, up with assistance

Prognosis

Condition should improve with time

Problem List

1. Expressive Aphasia
2. (R) Hemiparesis
3. Urinary Tract Infection
4. Respiratory Congestion
5. Spasticity
6. (R) Homonymous Hemianopia
7. Decubitus Ulcer (R) Ankle
8. Possible Constipation
9. Rehabilitation
10. Anxiety - over child
    - over future
11. Dietary Needs

NURSING PATIENT MANAGEMENT PROBLEM (NPMP)

Instructions to Participants

1. Further define the problem list, if you wish.

2. Describe a complete nursing management plan.

   - include as many feasible alternatives you can think of

   - expand each one fully, being as specific as possible

3. Please include both short and long term plans of management of these complex problems.

4. You are free to respond in essay, short statements, or chart form.

5. It is not important to explain the patient's problems, but to provide a plan of how to manage them.

6. Your answer will be evaluated in terms of the quality (comprehensiveness, relevance, prioritization), quantity and uniqueness of the nursing management actions.

I.D. NUMBER _____

APPENDIX 6

STUDENT N.P.M.P. SCORE SHEET

PROBLEM: Left Hemipariesis — SCORE

Relevant Nursing Decisions

Technical Decisions

Proper positioning	_____
Change in positions (Q2-4H)	_____
Active/Passive R.O.M.	_____
Safe transfer techniques	_____
Prevent trauma to weak extremities	_____
Supportive devices	_____
Assistance in ambulation	_____
TOTAL:	_____

Interpersonal Decisions

Explanation of pathology	_____
Counselling about future change in condition	_____
Education on rehabilitation aids	_____
Discharge teaching	_____
TOTAL:	_____

Ecological Decisions

Alter environment to facilitate independence	_____
Using right side	_____
Physioptherapist	_____
Counselling to family or significant others	_____
Occupational therapists	_____
TOTAL:	_____

Unique Decisions _____

TOTAL: _____

GRAND TOTAL: _____

PROBLEM: Expressive Aphasia SCORE

Relevant Nursing Decisions

Technical Decisions

Interpersonal Decisions

Encourage patient to use voice _____
Sign language _____
Reassurance when aggitated due to voice problem _____
Teaching about pathology _____
Explain time relationship of condition _____
Other forms of communication (writing, drawing) _____
Homogeneous staff approach _____

TOTAL: _____

Ecological Decisions

Speech therapy _____
Family education _____

TOTAL: _____

Unique Decisions _____

TOTAL: _____

GRAND TOTAL: _____

PROBLEM: Urinary Tract Infection — SCORE

Relevant Nursing Decisions

Technical Decisions

Culture urine _____
Administer antibiotics _____
Push fluids/specific fluids _____
Monitor intake and output _____
Give good peri care _____

TOTAL: _____

Interpersonal Decisions

Teach good perineal hygiene _____
Teach benefit of early ambulation _____
Explanation of pathology _____
Teach prevention of urinary tract infections - hygiene _____

TOTAL: _____

Ecological Decisions _____

TOTAL: _____

Unique Decisions _____

TOTAL: _____

GRAND TOTAL: _____

PROBLEM: Respiratory Congestion SCORE

Relevant Nursing Decisions

Technical Decisions

Suction equipment at bedside _____
Help patient with deep breathing _____
Help patient with coughing _____
Culture Sputum _____
Mobilize patient _____
Use Incentive Sperometer _____
Supply Kleenex _____
Supply humidifier _____
Elevate head of bed _____
Do postural drainage _____

TOTAL: _____

Ecological Decisions

Counsel re life style (i.e. smoking) _____

TOTAL: _____

Unique Decisions

TOTAL: _____

GRAND TOTAL: _____

PROBLEM: Spasticity — SCORE

Relevant Nursing Decisions

Technical Decisions

Relieve stimuli causing spasticity (full bladder, pain, etc.) _____

Positioning _____

Warm/cold compresses _____

Antispasmotic medication _____

Move limbs slowly _____

TOTAL: _____

Interpersonal Decisions

Education about spasticity _____

TOTAL: _____

Unique Decisions

TOTAL: _____

GRAND TOTAL: _____

PROBLEM: Right Homonymous Hemianopia SCORE

Relevant Nursing Decisions

Technical Decisions

Approach from (L) visual field _____

TOTAL: _____

Interpersonal Decisions

Educate re pathology of condition _____

Counsel re time for adjustment _____

TOTAL: _____

Ecological Decisions

Adjust environment to visual fields _____

TOTAL: _____

Unique Decisions

TOTAL: _____

GRAND TOTAL: _____

PROBLEM: Decubitus Ulcer Right Ankle — SCORE

Relevant Nursing Decisions

Technical Decisions

Good skin care _____

Change positions _____

Protect from pressure (sheepskin) _____

Dress decubitus ulcers _____

Culture _____

TOTAL: _____

Interpersonal Decisions

Educate re prevention and healing of decubitus ulcers _____

TOTAL: _____

Ecological Decisions

TOTAL: _____

Unique Decisions

TOTAL: _____

GRAND TOTAL: _____

PROBLEM: Constipation SCORE

Relevant Nursing Decisions

Technical Decisions

Mobilize patient _____

Provide increased fluids _____

Provide high fibre diet _____

Administer laxatives/suppositories/enemas as ordered _____

Check for impaction _____

Provide soft diet _____

TOTAL:

_____

Interpersonal Decisions

Education re cause _____

Education re relief _____

TOTAL:

_____

Ecological Decisions

Dietician _____

TOTAL:

_____

Unique Decisions

TOTAL:

_____

GRAND TOTAL:

_____

PROBLEM: Rehabilitation — SCORE

Relevant Nursing Decisions

Technical Decisions

TOTAL: _____

Interpersonal Decisions

Counsel patient to relay expectations of rehabilitation _____

Counsel re job analysis _____

Counsel re grieving process _____

TOTAL: _____

Ecological Decisions

Counsel re location of rehabilitation _____

Consult with rehab physician _____

Consult with VON, homemaker _____

Consult with P.T., O.T., speech _____

TOTAL: _____

Unique Decisions

TOTAL: _____

GRAND TOTAL: _____

PROBLEM: Anxiety — SCORE

Relevant Nursing Decisions

Technical Decisions

Allow child to visit _____

TOTAL: _____

Interpersonal decisions

Spend time with patient _____

Counsel patient with past ways of dealing with crisis, support group, etc. _____

TOTAL: _____

Ecological Decisions

Consult with social worker _____

Educate Family/significant others re dynamics of crisis, stress, etc. _____

Consult with CON, PHN at discharge _____

TOTAL: _____

Unique Decisions

TOTAL: _____

GRAND TOTAL: _____

PROBLEM: Dietary Needs — SCORE

Relevant Nursing Decision

Technical Decisions

Monitor weight	_____
Provide balanced diet	_____
Give good mouth care	_____
Cut food to manageable size	_____
Provide bib	_____
Provide assistive devices	_____
TOTAL:	_____

Interpersonal Decisions

Education re diet	_____
Counsel re financial needs and diet	_____
TOTAL:	_____

Ecological Decisions

Consult with Dietician	_____
TOTAL:	_____

Unique Decisions

TOTAL:	_____
GRAND TOTAL:	_____

APPENDIX 7

QUESTION USED IN FACE VALIDITY STUDY

Please answer the following question by circling the appropriate number.

Do you think this problem is a realistic problem one would encounter on a typical neurological ward?

1.	2.	3.	4.	5.
Not realistic		Realistic		Very realistic